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HEARINGS

317

BEFORE THE

SENATE

TEE ON INTERSTATE AND FOREIGN COMMERCE

OF THE

HOUSE OF REPRESENTATIVES

ON

57-5134

FOOD BILLS H. R. 3109, 12348, 9352, 276, AND 4342, FOR
TING THE ADULTERATION, MISBRANDING, AND IMITA-
OF FOODS, BEVERAGES, CANDIES, DRUGS, AND CON-
ENTS IN THE DISTRICT OF COLUMBIA AND THE
TERRITORIES, AND FOR REGULATING INTER-
STATE TRAFFIC THEREIN, AND FOR
OTHER PURPOSES.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

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PURE FOOD LEGISLATION.

HEARINGS BEFORE THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE OF THE HOUSE OF REPRESENTATIVES ON BILLS H. R. 3109, 12348, 9352, 276, AND 4342, PROVIDING AGAINST THE ADULTERATION OR MISBRANDING OF FOODS, BEVERAGES, DRUGS, ETC., IN THE DISTRICT OF COLUMBIA AND THE TERRITORIES, AND FOR REGULATING INTERSTATE TRAFFIC IN SUCH PRODUCTS.

TUESDAY, *March 11, 1902.*

The committee met at 11.15 a. m., Hon. William P. Hepburn in the chair.

The CHAIRMAN. The committee has determined that at these hearings, which will continue from day to day until the subject is exhausted, the whole subject of pure food and drugs, as represented in five bills pending before the committee, will be considered. 3109, 12348, 9352, 276 (although the committee has acted upon that bill), and 4342 are the bills that may be considered as before the committee.

Gentlemen, our sessions will be from 10.30 o'clock in the morning until 12 o'clock noon, and (although our regular meetings are held only on Tuesday and Friday) they will be continued from day to day until all persons have been heard. But even under those circumstances you can see that the time is limited, and we will have to urge upon gentlemen who address the committee the virtue of brevity. It would be the pleasure of the committee, if it should meet with your pleasure, that briefs should be prepared and that the oral discussions should be with regard to particular features of the bills. I suppose that there are opponents of all these bills; I do not know about that, or know how many. If it could be arranged among such classes, or among the speakers, perhaps it would be better. The discussion will be opened by Dr. Freer.

STATEMENT OF DR. WILLIAM FREER, CHAIRMAN OF THE EXECUTIVE COMMITTEE OF THE NATIONAL PURE FOOD AND DRUG CONGRESS.

Dr. FREER. I appear, Mr. Chairman and gentlemen of the committee, before you this morning to agitate the favorable report of the bill before you, No. 3109, known as the Hepburn bill.

The CHAIRMAN. I will say, gentlemen, that this is the Brosius bill; there is nothing of Hepburn in it except the name.

Mr. COOMBS. There is a good deal in a name.

Dr. FREER. The bill is not the outgrowth of a single mind or the work of a single year. It is rather the product of a careful consideration by

individual legislators, as early as the time of Mr. Paddock, with the modifications which have since been introduced as the result of the careful consideration by three successive congresses—the so-called pure food and drug congresses—which were composed of delegates appointed by the governors of States and by representative business bodies, the producing and commercial bodies of the country, and also the representatives of the various boards of health, and other official organizations of the several States which had to do with this general subject in their various territories and in their States.

The purpose of the bill is twofold. It may be stated under one broad head: To protect commerce, not only the man who makes, not only the man who buys, but also the man who sells. Protection against two things. In the first place, against the introduction of materials which are injurious to health, in such manner at least as to cause injury to health; and, in the second place, to protect both the consumer and the dealer and the manufacturer of legitimate products, of honest products sailing under their own colors, from the results of fraud.

Now, in our experience—and I speak from considerable experience in connection with the pure-food work of the State of Pennsylvania—from our experience in that State we find more difficulty in dealing with the subject of fraud and the sale of imitation materials, the sale of materials whose qualities are injured by the abstraction of valuable substances, or by the addition of undesirable substances for the purpose of adulteration, and so on, than we do from the introduction of materials which are injurious to health.

Our bill is intended to cover both of these grounds, and I am sure that I represent the consensus of opinion of the National Pure Food and Drug Congresses, when I say that I am sure that any legislation passed by the National Congress which failed to take into account that glaring evil would fail in a very important point.

The bill proceeds along the lines of the English food and drug act, and this is desirable for several reasons. In the first place, because the terms of the English food and drug act have been subject to interpretation in courts, because the terms of this act have been very largely adopted in our State legislation, and are therefore more or less familiar to courts, and more or less familiar to those who have to conform to the terms of State legislation.

It is the thought of those who advocate national action that national action is necessary because of the fact that while the United States Constitution reserves to each State its own police power it is, on the other hand, unable to pass beyond the boundaries of the State; whereas so happily is our nation constituted that the commerce of the country passes freely over every boundary. And yet, as a result of that free passage of material from one part of the country to another part we find that a very large proportion of the materials with which a State has to deal, of the adulterated materials, are materials which come from outside the territory of the State.

The CHAIRMAN. Doctor, have you facts from which you can give us some idea of the extent of adulterations in foods and drugs?

Dr. FREER. The most comprehensive report of this kind which I know of is that presented in the late report of the State board of health of the State of Massachusetts, which covers a period of about 18 years, from the time their work began until the end of the fiscal year 1900, in which it is shown that of the samples of milk exam-

ined—and they are of course largely of Massachusetts production—38 per cent were adulterated. That percentage would be less in other States, because the standards of Massachusetts are rather high. In the case of other foods, 18.7 per cent. The proportion of adulteration of other foods, however, has diminished from the beginning of the period under the execution of the law, and toward its close they are in the neighborhood of 15 to 20 per cent, the percentage having been diminished from 30 per cent; and I might add here that the character of the scrutiny to which foods are now subjected is much closer and more searching than it was when the work was begun. So if we were to compare the two periods, taking into account this latter fact, I would not be surprised if we would find the proportion of adulteration diminished, say to 10 per cent.

The drugs of the State, so far as they were represented by samples submitted for examination, were adulterated to the extent of 37 per cent. On the other hand, the report carefully states that only those classes of drugs were selected which were most likely to be subject to adulteration. So these figures, for all classes of foods and drugs examined (31 per cent of adulteration) are excessive, because the fact is that the men who set out to take samples naturally selected only those they believed from some circumstance or other to be suspicious.

The CHAIRMAN. You say 31 per cent?

Dr. FREER. Thirty-one per cent of the samples examined.

The CHAIRMAN. Oh, I understand. Can you give the committee some idea of the extent of the general business as it would be reported to us, to the members of this committee—

Dr. FREER. Several years ago I made a very careful study of this question, based upon the reports of various State controls, and the figures range with them from about 5 per cent to 15 per cent. I should say that 5 per cent was nearer right than 15 per cent of the foods adulterated as taken by the present methods of examination.

The CHAIRMAN. From 5 per cent to 15 per cent of the articles or of the quantity of food consumed?

Dr. FREER. Of the quantity of foods consumed. The total amount of adulterable food sold in this country, expressed in dollars and cents value, I had occasion to refer to several years ago, and I can place it between one and one-half and two billion dollars' worth of foods. That is adulterable foods, not adulterated foods. I exclude large staples, such as our fresh meats, such as our fish, such as our flours, from that category. And yet since that time we have found in the State of Pennsylvania oysters which have been repeatedly dosed with preservatives to such an extent as to make them, I think, undesirable for use, and certain classes of meat preparations have been found that were a little overweighted with starch. So that my figures would have to be increased rather than diminished since the time of that estimate.

The CHAIRMAN. Meats, you say?

Dr. FREER. Bologna sausages and articles of that kind.

The CHAIRMAN. Adulterated with what?

Dr. FREER. Starch. Are there any further inquiries on that point, Mr. Chairman?

The CHAIRMAN. No, sir.

Dr. FREER. The figures of the Minnesota report, more fully than that of any other State to which I have had access, show the amount

of interstate commerce in foods that are adulterated. Out of 39 samples of adulterated lard of known origin 21 came from outside the State of Minnesota. Of 271 samples of white vinegar, to which solids had been added to make them appear like cider vinegar, 103 came from other States. Of 27 samples of adulterated jellies, of which 25 were of known origin, 24 came from outside the State. I do not wish to take the time of the committee more than to give this as illustrative—

Mr. STEWART. What is the adulteration in the case of those articles you have referred to?

Dr. FREER. The adulteration of these articles consists in the addition of materials which would tend to deceive as to the nature of the substance, rather than to add, as a rule, anything which is particularly injurious to health. For example, the addition of solids to so-called white wine vinegars, these distillery vinegars, for the purpose of making them pass as cider vinegars.

Mr. STEWART. Is that injurious to health?

Dr. FREER. No, sir; I do not regard it as injurious to health. I simply regard it as fraud when it is done without notice.

The form of the English food and drug act differs from the continental legislation in this: That instead of prohibiting specific things it establishes general principles and makes definitions. We have in the Hepburn bill, or bill No. 3109, in section 5, definitions which define the terms "drug" and "food" and the term "misbranded," as used in this act, and also the term "adulteration" is defined in section 61, covering those two main points of which I have spoken—prevention of the addition and sale of materials injurious to health and also the sale of materials in such a manner as to deceive the purchaser. It is recognized by those who have earnestly sought this legislation that there are many points about which we ought not to attempt to exercise a snap judgment. There are many questions, for example, in reference to the healthfulness of things which a progressive commerce has introduced.

It is not desired to call a thing bad because it is new. It is not desired to shut out from the markets products which have their place simply because they may crowd something else that has been on the market for a long time. The purpose is simply that they may sail under their own colors, and if they are introducing anything which is injurious they shall be excluded, or at least that sufficient notice shall be given in case the injury would be such as to affect but a small class of consumers, so that the invalid, for example, might have due notice or warning that he or she should take a food thinking it not to contain anything but the ordinary substance, when in fact it might contain a substance like salicylic acid in considerable quantities, which, if used in a drink, would be injurious to one with weak kidneys.

Mr. CORLISS. Do you seek to secure legislation to prohibit the use of an article that is not deleterious to health?

Dr. FREER. No, sir; not to prohibit it, but simply to have it sold under its own name.

Mr. CORLISS. Why do you call, for instance, any material that is not deleterious to health fraudulent if it is inserted—why is it fraudulent?

Dr. FREER. It is not fraudulent unless it is sold under some other name.

Mr. COOMBS. That is, the compound is sold under another name?

Dr. FREER. The compound which is introduced is sold under another name. If, for example, water is added to milk, to take a plain example.

Mr. COOMBS. That is never done.

Dr. FREER. No, not often. It is not fair that the product of the pump should be sold at milk prices.

Mr. CORLISS. You gave as an illustration vinegar. You said it had added to it some product which is not injurious to health?

Dr. FREER. Yes, sir.

Mr. CORLISS. What harm would there be—

Dr. FREER. It should not be sold as cider vinegar. There is no objection to its being sold for what it is, but the man who wants to buy cider vinegar because he prefers it to other vinegar has a right to protection, that he may know he is buying what he wants.

Mr. CORLISS. Do you not think that is carrying paternalism too far?

Dr. FREER. No; I do not.

Mr. CORLISS. The Government assuming control over those subjects?

Dr. FREER. I do not, because the injury is a very common one and a very widespread one,

Mr. CORLISS. What is the injury if the product is not injurious to health or does not infringe upon a trade-mark or some particular brand?

Mr. TOMPKINS. You had better send some of the oleo men here and let them answer.

Dr. FREER. The injury which comes to any man from being defrauded.

Mr. STEWART. The financial injury also?

Dr. FREER. He is financially injured, certainly.

Mr. RICHARDSON. But in such a case there is no injury to health?

Dr. FREER. Not unless he gets mad and indulges in profanity to such an extent as to injure his health.

Mr. RICHARDSON. Is it injurious to health; is not that the general idea?

Dr. FREER. That is possibly a very common acceptation established for twenty or thirty or forty years on the English statute. It has been the almost universally adopted idea of the definition in all our State legislation upon that subject.

Mr. ADAMSON. I agree with you about what you say about the necessity of selling and branding and making products just what they pretend to be. But the question with me is whether local authorities can not be relied upon to do that, whether we should not rely upon local authorities to keep the people's faces clean and their toe nails trimmed, and so on.

Dr. FREER. This law is simply to control the product from the point where the States can not control it. It is not the purpose to take up the work of the States, the work the States are doing and do it for them, but simply to supplement that work and reach the product where the States can not reach it. Under the present State acts the word "knowingly" is left out in most of the States and adulteration is made a misdemeanor, and a man offending, whether knowingly or not, is held before the courts for the payment on conviction of having committed the act, without reference to knowledge. In a great many cases, in a great majority of the cases, most of the foods that are the subject, are the cause of this action on the part of the local authorities have been

imported from other States. The local dealer has no protection unless he buys within the State wholly. I believe too much in the United States to advocate the restriction of food commerce within the limits of a single State. But, on the other hand, I thoroughly believe that the local dealer should have protection. This bill provides a guaranty clause whereby good and sufficient safeguards and proof of offense may be traced through the National Government back to the real offender—the man who made the article—and he receive the punishment instead of the retailer.

The CHAIRMAN. That is the provision in which you provide that the penalty shall not be applied to that man who holds a guaranty of purity from his vendor?

Dr. FREER. Yes, sir. The latter part of section 6, on page 8—the last two provisos of section 6, page 8, of the act—cover that point, and this has been introduced at the urgent request of the retail trade and is, I believe, a fair and just practicable solution of that difficulty which we meet in our State action.

The CHAIRMAN. To your mind what are the objections to the remedy of publicity?

Dr. FREER. I have no objection to publicity.

The CHAIRMAN. Well, then, as a wholesale remedy—stating the ingredients!

Dr. FREER. Simply because experience has shown that publicity alone does not accomplish the results; it shows that men will change the names of materials so rapidly that if publicity alone were relied on we would not have an effective preventive to fraud, for a mere change in name gets around the last publication. Various names of firms are changed, and low-grade goods are sold under one firm name and high-grade goods under another firm name.

The CHAIRMAN. That that label should state just what is contained in the package; what is the objection to that?

Dr. FREER. I have no objection to that if it does not go too far and require more of a man producing in the trade than is fair to him in view of competition. I do not believe in the betrayal by legislation of trade secrets unless it is absolutely necessary for the public welfare.

The CHAIRMAN. Suppose that trade secret involves adulteration?

Dr. FREER. If it involves adulteration, I think a statement of the nature of the adulteration ought to appear, or if the material is absolutely injurious to health then I think it ought to be prohibited.

The CHAIRMAN. I remember talking with a gentleman here the other day and he gave this illustration: Here is a jelly with 50 per cent of apples, 40 per cent of sugar, and 10 per cent of glucose. Another jelly with 40 per cent of glucose and 10 per cent of sugar. Now, he said that there would be an objection to stating on the label just what that package contained. I want to know from you what the objection is.

Dr. FREER. The objection would be solely that made by the men who are offering this article on the market.

The CHAIRMAN. The purchaser would not object to that?

Dr. FREER. The purchaser would not object to that publicity; no, sir.

The CHAIRMAN. What advantage does the seller have except that that leads in the outset to the supposition that he thinks is in the mind of his purchaser that there is 40 per cent of sugar there and only 10 per cent of glucose, in the case of the inferior article?

Dr. FREER. The quality of an article is not due wholly to the materials which are present in it, but often due to proportions. It is not simply nutritive value that we are trying to get in foods often, but certain other qualities which are contributed. There are certain other qualities which will enable us to keep the article, and all these points must be kept in mind. If a man happened to find a happy proportion of materials which will serve his purpose, serve all these purposes, I think he has a right to keep that pretty well to himself unless public welfare demands that publicity should be had.

Mr. RYAN. And who is to determine whether public welfare requires that?

Dr. FREER. I think, in the first place, the Legislature of the country is the proper authority to determine the general principle that shall apply.

Mr. COOMBS. But who administers this law?

Dr. FREER. This law as it is proposed is to be administered by the Secretary of Agriculture.

Mr. COOMBS. In what way? Please state succinctly.

Dr. FREER. Through a properly organized division in his Department.

Mr. COOMBS. A commission?

Dr. FREER. Only a commission, in so far as it is necessary to determine matters of healthfulness.

Mr. COOMBS. How do you reach the offender?

Dr. FREER. The offender is reached in the first place by an examination of the goods sold by him, and an examination of those goods under the direction of the Secretary of Agriculture.

Mr. COOMBS. You find that he is violating the law. Now, how do you reach him?

Dr. FREER. Upon information to the district attorney of the district in which he resides.

Mr. COOMBS. Then you bring proceedings in a court?

Dr. FREER. We bring proceedings in a court.

Mr. COOMBS. To condemn his property?

Dr. FREER. To try him, in the first place.

Mr. COOMBS. That is the penal offense?

Dr. FREER. That is the penal offense, and also for confiscation, if that is thought necessary.

Mr. ADAMSON. My recollection is that you wish to apply this to States as well as to Territories and the District of Columbia; is that correct?

Dr. FREER. Only in so far as interstate commerce is concerned, when these products come in original packages.

Now, I would like to call the attention of the committee, if I may trespass upon your time just a moment more—

The CHAIRMAN. Right there, let me ask you: Here is an original package which contains, we will say, a gross. A retailer has broken that and has remaining, say, half a gross. It is your idea that he could under the provisions of this bill be punished for sales from that broken package?

Dr. FREER. I will confess to you, sir, that I am not sufficient of a lawyer to understand precisely the point which the United States courts have reached in interpreting what an original package is. This point has simply been introduced to avoid all danger of interference

with the police powers of the several States—this reservation as to the sale and control of sale in the original package.

The CHAIRMAN. What was in the mind of the gentlemen who prepared this bill. That is what I want to get at. According to your statement here a man sells 144 packages—sells them all together. Now, he is amenable, but he breaks the package and at least after he has sold one, then the 143 packages that he would sell without fear of violating this law, was that in the mind of the—

Dr. FREER (interposing). No, sir; I do not think so; because, as a rule, more packages than one are bought at a time, and it would be entirely possible for the inspectors to secure original packages of every article which is subject to interstate commerce.

Mr. TOMPKINS. Suppose it was ascertained that a manufacturer or wholesale dealer had shipped from one State to another State articles falling within the condemnation of this measure, even though by the consignee or vendee the packages were broken, is there anything to prevent him from being punished under this?

Dr. FREER. Nothing except a question of evidence.

Mr. TOMPKINS. It would be a question of evidence?

Dr. FREER. Yes, sir.

Mr. STEWART. Has the Agricultural Department apparatus and laboratory sufficient to ascertain the adulteration of foods and drugs without the assistance of outside parties?

Dr. FREER. They have done more in the study of foods and food adulterations than any other laboratory in America.

Mr. STEWART. And with reference to drugs?

Dr. FREER. They have not done so much with reference to drugs.

Mr. STEWART. Have they the necessary apparatus now?

Dr. FREER. The apparatus for drug analysis is simple, and they have the apparatus; yes, sir.

Mr. STEWART. And without the assistance of anybody else is the apparatus sufficient to determine the adulteration of drugs?

Dr. FREER. I think so.

Mr. STEWART. The chairman spoke about the respective proportions of sugar and glucose and so on in jelly. Have they the apparatus to discover those proportions without outside assistance?

Dr. FREER. Yes, sir.

The CHAIRMAN. Will you explain who constitutes the Association of Official Agricultural Chemists of the United States?

Dr. FREER. The Association of Official Agricultural Chemists is an organization composed primarily of the chemists of the United States experiment stations in the agricultural colleges established and maintained by the land-grant acts of 1860 and 1890.

The CHAIRMAN. It is not a corporation?

Dr. FREER. No, sir.

The CHAIRMAN. It is a voluntary association?

Dr. FREER. A voluntary association.

The CHAIRMAN. Has it any legal existence?

Dr. FREER. It has no legal existence; its proceedings are published as official documents of the United States Department of Agriculture, and its methods have been accepted as standard by many of the courts of the country.

Mr. TOMPKINS. It is not an organization for profit either, is it?

Dr. FREER. Not at all; it is simply an organization of men for the promotion of their science.

Mr. STEWART. It has by-laws?

Dr. FREER. Yes, sir.

Mr. STEWART. Whom does it exclude?

Dr. FREER. It includes chemists connected with the State food controls.

Mr. TOMPKINS. Does it exclude—

Dr. FREER. The terms of its constitution are inclusive rather than exclusive; it does not allow the vote of any person on the matter of control except those related to methods of control.

The CHAIRMAN. There was a phrase in this bill that I wanted to call your attention to. It is on page 9, commencing on line 11:

Such standards and determinations, when so fixed by the Secretary of Agriculture for the use of the chemists of the Department, may be read in evidence in the United States courts, but shall not be considered as determining the adulteration of any articles under section 6 of this act until such standards and determinations are approved in the courts.

Now, just what is meant by that, "are approved in the courts?"

Dr. FREER. The act recommended by your committee last year did not include this form, and this particular amendment to the bill has not been acted upon by the national pure food and drug congress. I suppose that the purpose was to obviate the objection made to the preceding form, that it required of the legislature of the nation the placing of the fixing of standards in a nonlegislative authority.

The CHAIRMAN. How is that?

Dr. FREER. That the preceding form—the form which gave the Secretary of Agriculture the power to fix standards—lodged with him a portion of the legislative authority, and there was objection made to that.

Mr. STEWART. And now you lodge it with the court—it is within the jurisdiction of the court?

Dr. FREER. I suppose, if I may suggest, that this form was adopted following a suggestion which has been made, which has been adopted really, by an act of Parliament regulating and fixing the standard in the English courts. An official commission is appointed. This commission fixes its standards, but these standards are not the final authority; they are subject to the presentation of counter evidence, and then the matter is determined by the ordinary method of determining truth, by the weight of evidence submitted.

Mr. STEWART. Do you remember who drew that section?

Dr. FREER. This particular section? I do not know.

Mr. STEWART. It was not a member of Congress. Was it a lawyer?

Mr. FREER. I do not know who drew it.

Mr. RICHARDSON. That section does provide, does it not, that even if the Secretary of Agriculture does provide these standards, and it is used as evidence in the court, if the court believes that the Secretary of Agriculture was wrong in fixing the standard, the court can act accordingly?

Dr. FREER. Yes; that is true.

Mr. RICHARDSON. So it leaves it finally with the court and the jury to fix what the standard is?

Dr. FREER. Yes; except that you place before the court the carefully ascertained facts gathered by as representative a body of men as

we can get together, after a full investigation, and that is simply the weight of evidence.

Mr. ADAMSON. Would not the result be no standard and no conviction?

Dr. FREEER. I don't think so.

Mr. ADAMSON. If you had no standard it would be hard to make out a case—

Dr. FREEER. I am entirely ready to leave that matter to the judgment of the committee, who know more about law than I do.

Mr. COOMBS. If there is no standard absolutely fixed and it is left to the court, how does that differ from the English law you have referred to?

Dr. FREEER. The English law fixes no standard in every district; the standard is practically fixed by the local authority.

Mr. COOMBS. That was kind of a common-law doctrine with reference to cheese, was it not?

Dr. FREEER. Yes, sir; a great variety of foods. A great variety of foods were subject to the determination by the chemists and other health authorities as to what should be regarded as standards. They brought their authority to court, and if there was any counter evidence it was presented to the court; and it was felt that there should be some central body, but it was not intended to prevent the introduction of new evidence.

Mr. COOMBS. Then it opens up the whole question in the courts?

Dr. FREEER. Yes, sir.

Mr. RICHARDSON. Do you not think that the result of that section would be that it would be submitted to the jury, and if they believed that the adulteration of the food was such that it injuriously affected the health of communities that they would find a verdict of "guilty;" but if they found that the vinegar, for instance, that you have spoken of as having been mixed with the other was wholesome, they would render a verdict of "not guilty?" That is the main object that you have in view?

Dr. FREEER. No, sir; it is twofold--to prevent fraud and to prevent injury to health.

Mr. RICHARDSON. "To prevent fraud" is to prevent the making of anything that affects injuriously the health of the country.

Mr. ADAMSON. Is there any State in this Union the legislature of which refuses to provide for the punishment of cheats and swindlers who make or sell one thing under the pretence of its being another thing?

Dr. FREEER. There are a good many States which have no machinery for the discovery of such persons.

Mr. ADAMSON. Why do you not go to those States and get them to take charge of it and keep the burden off Congress?

Dr. FREEER. For this simple reason: We can get no protection from the cheats from the other States; it puts the whole burden on the retailers.

Mr. ADAMSON. You can punish the men who commit the frauds.

Dr. FREEER. Yes; we can punish the retailers.

Mr. ADAMSON. And if the retailer is cheated let him get after the fellow who cheated him.

Dr. FREEER. But the small individual retailer finds it a pretty large job.

Mr. ADAMSON. If I find you with stolen goods I can hold you, and

then if you got them from somebody else you can put it on that other man, and we can hold him, unless he proves that he got them from somebody else, and so on. That is State law.

Dr. FREER. Yes; but it imposes too large a cost on the small dealer.

The CHAIRMAN. I wish you would find out who inserted that clause in this bill, I would like to know what his views are on this subject.

Dr. FREER. I will endeavor to do so, sir.

The CHAIRMAN. Twelve o'clock has arrived and we can not go on further to-day.

Mr. COOMBS. That particular clause was not in the last bill.

The CHAIRMAN. I think we had better take up to-morrow the principles involved in your bill, Mr. Corliss.

Mr. CORLISS. This gentlemen has not concluded, has he? I wanted to ask one question. I would like to ask you, Dr. Freer, do you propose to stop all kinds of fraud in reference to foods; and if so, why not apply that to every article of merchandise throughout the country?

Dr. FREER. Simply because in the case of foods the difficulties of protection are so large.

Mr. CORLISS. Could you protect health by requiring pure food?

Dr. FREER. Yes.

Mr. CORLISS. Now, you want us to go on and say that no man shall fraudulently represent any food product. Why shall not the Government take hold of all other kinds of merchandise in the same way? The same principle would apply there.

Mr. ADAMSON. All human conduct as well as this.

The CHAIRMAN. You can not expect to make the world perfect in a day.

Mr. COOMBS. You have laws regulating morals anyway—

Mr. ADAMSON. I do not think the Federal Government was ever created to make the world perfect.

The CHAIRMAN. The committee will be in recess until to-morrow.

Adjourned.

WEDNESDAY, *March 12, 1902.*

The committee met at 10.30 a. m., Hon. Loren Fletcher in the chair.

The ACTING CHAIRMAN. The chairman will not be here for a half hour or so and we will proceed with the hearing which was begun yesterday.

Mr. CORLISS. Mr. Grosvenor will present his views on the bill I introduced and upon the other bills in reference to this subject pending before this committee.

Mr. RICHARDSON. What is that bill, Mr. Corliss?

Mr. CORLISS. No. 12348.

STATEMENT OF MR. ELLIOT O. GROSVENOR, OF DETROIT, MICH.

Mr. GROSVENOR. Mr. Chairman and gentlemen of the committee, I appear before your committee as the representative of the Association of Manufacturers and Distributors of Food Products, which is an organization embracing manufacturers of jellies, jams, pickles, preserves, etc., and also as a representative of the Picklers and Preservers' Association of the State of Pennsylvania.

That there is a popular demand, and that that has been growing for a number of years, for the establishment of a national food law I think can not be denied. That there may be a necessity for some such law, perhaps, is equally true.

There has been, both upon the Continent of Europe, in England, and in this country, for, say, twenty or more years a continued evolution of food laws. I refer to the principles of food laws. The out-growth of that is seen in this country in the fact that at the present day all the States of the United States have a food law of some kind or description save three, and in nineteen of those States there is maintained a special department for the enforcement of that State food law.

Mr. COOMBS. What three States are those?

Mr. GROSVENOR. I think, sir, one is Mississippi, one is New Mexico, and, if I remember correctly, the other is Arizona.

Mr. CORLISS. Only one State, then?

Mr. GROSVENOR. I am including the Territories as States in making this statement.

Mr. COOMBS. Then all the States and all the Territories have such laws except those three?

Mr. GROSVENOR. Yes, sir. In fairness to myself, I must say that it is some time since I looked them up, but in 19 of them there has been a department established for the enforcement of these State laws. These State laws in these 19 and in other States, 29 in all, have taken the form of what I call an omnibus food law; that is, there has been laid down 7 definitions of what shall be considered an adulteration, and if your committee will spare a minute, I would like to read in a general way the requirements of the 7 subdivisions of that law.

Mr. STEWART. What law, in what States?

Mr. GROSVENOR. I am going to read, sir, from the law of Michigan, which is a fair sample. The language of all these laws is about this:

An article shall be deemed to be adulterated within the meaning of this act:

First. If any substance or substances have been mixed with it so as to lower or depreciate or injuriously affect its quality, strength, or purity.

Second. If any inferior or cheaper substance or substances have been substituted wholly or in part for it.

Third. If any valuable or necessary constituent or ingredient has been wholly or in part abstracted from it.

Fourth. If it is an imitation of or is sold under the name of another article.

Fifth. If it consists wholly, or in part of a diseased, decomposed, putrid, infected, tainted, or rotten animal or vegetable substance or article, whether manufactured or not, or, in the case of milk, if it is the product of a diseased animal.

Sixth. If it is colored, coated, polished, or powdered whereby damage or inferiority is concealed or if by any means it is made to appear better or of greater value than it really is.

Seventh. If it contains any added substance or ingredient which is poisonous or injurious to health.

Mr. RICHARDSON. Do you think that is a good definition of adulterated food—that law in Michigan?

Mr. GROSVENOR. I would prefer, sir, to say that that covers every possible mixture.

Mr. RICHARDSON. And it is enforced, is it not?

Mr. GROSVENOR. The law is fairly well enforced, in many States, particularly in some of the middle Western States.

Mr. RICHARDSON. If all of the States do the same thing what would be the use or necessity of the National Government taking it up?

Mr. GROSVENOR. The condition among the different States that

now have a food law and a department to enforce it is this: Almost this exact language is used in these 29 States to embrace adulterations. Now, the language is, right down to the punctuation, almost exactly the same in the State of Ohio, in Illinois, Indiana, Wisconsin, and Michigan, and still in not one of those States is there any mixture or compound which can be sold in all the States under one label. In other words, the power given the commission in those States is such that they have ruled differently under exactly the same language.

Mr. STEWART. Is not the Michigan bill you have just read similar to this Brosius bill?

Mr. GROSVENOR. Yes; I think it is. I do not mean to say that the Brosius bill is modeled after the Michigan law, but the two may have a common origin.

Mr. RICHARDSON. Your purpose is, then, in asking the National Government to take hold of the matter, to get unity of action upon the part of the courts and unity of construction; is that it?

Mr. GROSVENOR. No, sir.

Mr. RICHARDSON. What is it, then?

Mr. GROSVENOR. My idea is that a national law should depart very radically from this style of a law, because of the conditions that now exist in these States to which I have referred. For this reason, if the national law shall be modeled on these same lines and the national commissioner given the same power as the State commissioners, suppose he says that a certain mixture shall be labeled in a certain way, and suppose that is sent from Illinois to Ohio and a man there sees that he can not sell that under the label that is on it. Can he sell it at all? That is one of the principal reasons why I object to a national law modeled upon the lines of the State food laws. You can not sell in Michigan, Illinois, Wisconsin, Indiana, and Ohio under precisely the same law the same product under the same label.

Mr. COOMBS. I suppose the advantage of a national law regulating interstate commerce is that the vendor can be reached, although he might be in a different State from where the food is finally lodged and sold, and distributed, or, vice versa, the people who sell it and engage in selling it can be reached.

Mr. ADAMSON. You mean you could take him up and try him and convict him in the State in which he has not been?

Mr. GROSVENOR. No; I say a Federal law—

Mr. COOMBS. A Federal law covering vendor and vendee can reach anybody anywhere.

Mr. GROSVENOR. I think, sir, that is true. That has been urged as the principal reason in the food congresses which was referred to yesterday. It was the difficulty of reaching a man who shipped into a State—

Mr. COOMBS. One State shipping might have one law regulating certain things and it might not touch the vendor who sends his goods out; they might arrive in the State where the law would reach him, but the law of the State might only apply to the vendor.

Mr. GROSVENOR. Yes, sir: of course the law of the State could not apply to the original packages anyway, but as long as those goods remain in the original packages the State police power could not touch them. Until that package was broken the State law would not operate, and that is the reason which has been strongly urged for national legislation—to acquire the ability to handle original packages.

I want to dwell upon that just long enough to show where the large manufacturer lands who, for instance, ships goods into the city of Chicago, granting now that the manufacturers in Missouri ship into the city of Chicago goods labeled to conform to the Illinois law, and the Chicago jobber ships those goods, we will say, to some point, Detroit, if you please, or Toledo, and those goods are not labeled properly for Ohio, nor for Michigan, but when the manufacturer sends them out he sends them to the State of Illinois and he has labeled them properly for that State, and he had a right to believe that whoever handled them afterwards would handle them in Illinois. Instead of that they were shipped to Ohio, and the manufacturer's name being on the goods, he is published and his business is hurt because of that reshipment, which he can not possibly know anything about.

Mr. CORLISS. How could this legislation prohibit that practice?

Mr. GROSVENOR. I do not think that any national legislation can absolutely do away with it; but I believe that a national law modeled upon reasonable lines will eventually result in the enactment of that law as a police power by the different States.

Mr. CORLISS. I understand your purpose is to secure a national law for the preservation of public health, and to prohibit the sale of any kind of food that is deleterious to health?

Mr. GROSVENOR. Yes, sir.

Mr. CORLISS. Do you desire to go farther and prosecute for any attempt at fraud?

Mr. GROSVENOR. Well, if I may be allowed to answer that, I would prefer waiting a few minutes until I come naturally to reading definitions of adulterations.

Mr. CORLISS. All right.

Mr. RICHARDSON. Wherein and how, then, according to the answer you have just made to Mr. Corliss, do you differ with the gentleman who appeared before us yesterday; what is the difference between you and him on this subject? He is for pure food and so are you?

Mr. GROSVENOR. And so are we.

Mr. RICHARDSON. But you differ from him, and I would like to know what is the difference. I just ask for information.

Mr. GROSVENOR. We differ very radically, and I think it will be shown very clearly if you will let me read the definition of "adulteration" as shown in the Century Dictionary, which various States and supreme courts have held to be authority in this country [reading]:

The act of adulterating or the state of being adulterated or debased by admixture with something else, generally of inferior quality; the use in the production of any professedly genuine article of ingredients which are cheaper and of an inferior quality, or which are not considered so desirable by the consumer as other or genuine ingredients for which they are substituted.

And then the Century Dictionary goes on and says there are three kinds of adulteration, in this language:

In commerce there are several kinds of adulteration; conventional, to suit the tastes and demands of the public—

That is, the public desires a certain amount of sugar in a jelly; they desire a certain amount of starch mixed with mustard, because the pure mustard is too rank, is not pleasing to the taste, "to suit the tastes and demands of the public." I ask you whether any law which will regulate to absolute prohibition, as some statutes will—the State

statutes in many instances—an article which is called for to suit the taste and demands of the people—
fraudulent, for deception and gainful purposes—

In my judgment, that is the only kind of adulteration which it is competent to regulate by law, either State or national; but I shall attempt to show a little later on that that is absolutely unnecessary only so far as it is necessary to protect the health of the people against deleterious or injurious foods. Then he mentioned a third—

and accidental or unintentional adulteration arising from carelessness in the preparation of the staple or commodity at the place of growth or shipment.

The best illustration I know of of that are some kinds of pepper. I am not thoroughly posted on the subject, but I am told that certain kinds of pepper when the berry shrivels or at the cutting of the berry it laps over onto a small percentage of sand; that a manufacturer in this country imports that pepper and grinds it, and he can not, absolutely can not, get rid of that sand, and under that kind of adulteration there is never found but a very small percentage of any substance foreign to the goods themselves.

I think this committee should distinguish very sharply between one who mixes two specified ingredients to make up a third and the man who mixes a cheaper or inferior substance with a specified one for gainful purposes. I do not think the position is at all tenable that the man who mixes two products to procure a third article, say baking powder—

Mr. RICHARDSON. Then you do not think a man who mixes ought to be required to denominate everything he puts in?

Mr. GROSVENOR. I do not, because we know a product of baking powder, we know it under that name, we know it has a certain effect, a certain strength, and we soon learn by using different brands—and they are all branded—that a certain brand is better, because a small quantity of it produces a given result. I do not think it is any more necessary than it is to brand a buggy with the kind of timber in the wheels. It is a mixture—a mixture of paint, wood, and iron, and we have a right to believe it is hickory, and we may be told it is hickory. We have no way of judging—

Mr. RICHARDSON. You can see that with the naked eye, can you not?

Mr. GROSVENOR. Yes; but as I understand it, a buggy wheel painted, as most of them are nowadays, and well varnished, does not disclose enough grain to allow the ordinary person to tell the kind of wood in the spokes. You can also see a cement, but you can not tell anything about its quality by looking at it.

Mr. STEWART. But it does not injure the eye, while these ingredients do injure the stomach.

Mr. GROSVENOR. That is the point exactly. We believe these things should be dealt with so that they should not have an opportunity of injuring the stomach. The Corliss bill makes no claim to originality. It was prepared by the association to which I have referred, and is believed to contain the better or best features of these different bills, State and perhaps national. Its administration is placed under the direction of the Department of Agriculture, and in our humble judgment we believe it ought to go there, but we realize that

your committee are probably the better judges where the administration of any law should go.

When we come to the regulative features of the Corliss bill, it simply and solely prohibits the use of any substance which in the quantity used is injurious to health. As I have stated, we believe that is as far as the law ought to go. It provides, further, that any manufacturer may submit to the food department a sample of the goods he wishes to put out under a certain label, with that label and with the formula under which these goods are prepared, and the food department is supposed to examine that sample and say to the manufacturer whether his goods conform to this law or not. In that way a manufacturer is able to learn and put his goods on the market absolutely free from any injurious substance. Often a manufacturer does not know, and it would cost a good deal to employ a scientific man to tell him whether his goods contain any injurious substance or not. For instance, in some of the States, fertilizers are submitted to the agricultural college stations in order that those who buy them may be informed as to their nature.

Mr. RICHARDSON. I do not understand, if you are not required to label the different ingredients, how you are to find out what is in them.

Mr. GROSVENOR. How is the consumer to find out?

Mr. RICHARDSON. Yes. Supposing there is something deleterious, something injurious to health; how are you going to find it out? Should the purchaser know?

Mr. GROSVENOR. We actually prohibit the use of anything deleterious, and the department that is in charge of its enforcement must look after that through their inspectors. As I understand it, there is a force of inspectors who go through the State and pick out different samples, and the analyses of the samples determine that question. The purchaser can not know under any law.

You will notice under the Corliss bill—and it differs slightly in that respect—that there is no penalty prescribed for the violation of this law, but a proceeding for the condemnation of the goods, which we believe is sufficient, has been substituted for the usual criminal penalty, and for this reason: I believe as a legal proposition that only in an act like a food act and in very few others under police powers may a guilty man be convicted, although it may be admitted by the prosecution that the man is innocent. Take the case of a retailer who buys his goods for the pure-food prices; he has them represented as pure food when he buys them, and they afterwards turn out to be adulterated. He knows nothing whatever of it. He is taken under the different State food laws and convicted.

Mr. COOMBS. How can he be if he knows nothing of it?

Mr. GROSVENOR. We do not believe he should be.

Mr. COOMBS. Is not the element of intent always taken into consideration?

Mr. GROSVENOR. I believe not, sir.

Mr. COOMBS. Where did you hear such a doctrine?

Mr. GROSVENOR. In the State of Michigan, in Ohio, in Massachusetts, and, I think, in Pennsylvania and New York, and in Minnesota and Missouri. I have right here a case of the Michigan supreme court bearing upon that point. If the gentlemen care to hear it, or hear a paragraph read, I will read it.

Mr. STEWART. Yes, I would like to hear it.

Mr. COOMBS. I understand it may be unlawful to sell a certain thing, but to take the power from the jury of determining whether there was a fraudulent intent—that could not be done.

Mr. STEWART. The fraudulent intent must be proved.

Mr. GROSVENOR. There can not be any crime without the intent shown; that is a general principle, but there is an exception in the case of food laws.

Mr. STEWART. Any such exception would be absolutely unconstitutional and void.

Mr. RICHARDSON. The act itself would infer the intent, just like the use of a deadly weapon would infer malice.

Mr. GROSVENOR. May I read this?

Mr. COOMBS. Yes.

Mr. GROSVENOR. This is a case where a man sold a mixture colored with a harmless coloring matter. The sale was admitted. It was admitted by the State that he did not know it was colored; he sold it innocently; that he had paid a fair price for it; that there was nothing about the circumstances of the purchase that would lead him to believe it was adulterated. Yet he was convicted in the lower court. He asked the supreme court for a discharge on the ground that there was no guilty knowledge and no intent.

Mr. STEWART. What was the penalty; was it made a felony or a penal offense?

Mr. GROSVENOR. A misdemeanor by language, but a felony by penalty.

Mr. STEWART. Read what the court said.

Mr. Grosvenor read as follows:

In the case of the State v. Smith (10 R. I., 260), the court, in speaking of the offense of selling adulterated milk, said:

"Counsel for defendant asked the court to charge that there must be evidence of guilty intent on the part of the defendant and a guilty knowledge in order to convict him. Our statute, in that provision of it under which the indictment was found, does not essentially differ from the statute of Massachusetts, and there previous to the enactment of our statute the supreme court had determined that a person might be convicted although he had no knowledge of the adulteration; the intent of the legislature being that the seller of milk should take upon himself the risk of knowing that the article he offers for sale is not adulterated."

The same ruling, that no criminal intent is necessary, has been held to apply under an act forbidding the sale of oleomargarine or other imitations of dairy products.

Mr. STEWART. Under the statute, is there any provision of the imprisonment of the offender found guilty without knowledge?

Mr. COOMBS. That simply assumes that there was an implied intent. If a man goes and carelessly does a thing which the law forbids, intent is assumed, and I do not think those decisions go beyond that; and if a man is perfectly innocent in reference to it, it is a different thing entirely, and I do not think the law can possibly hold him.

Mr. GROSVENOR. I see the gentleman's point and I am not enough of a lawyer to answer it, but I know these facts existed in this case.

Mr. COOMBS. There might not be an intent in selling food to injure some one who purchased it or upset his stomach; that intent might not exist; but if a man sells it knowing it is in violation of the law, the intent is naturally assumed. He is responsible.

Mr. GROSVENOR. It may be assumed, but that state of facts nevertheless exists; if a man buys goods without any circumstances sur-

rounding the purchase to show that there is anything wrong, and he sells them in good faith, and they are adulterated, if that turns out to be the case, he may be sent to jail.

Mr. CORLISS. Finish that paragraph you were reading.

Mr. GROSVENOR. This is the case of the State against Newton and a case of the Commonwealth against Gray, One hundred and twelfth Massachusetts, page 257.

[Mr. Grosvenor reads from the case referred to.]

Mr. RICHARDSON. Is not that decision based upon the idea that ignorance of the law does not excuse anyone.

Mr. COOMBS. If the law says it is deleterious, he is assumed to know the law.

Mr. RICHARDSON. If he is ignorant of it and goes to sell it, he is not excused, upon the ground that ignorance of the law does not excuse a man.

Mr. GROSVENOR. Ignorance of what the law is?

Mr. RICHARDSON. Yes.

Mr. GROSVENOR. Oh, he must not only know what the law is, but he must know what his goods are, which it is absolutely impossible for him to know.

Mr. STEWART. The law can not charge him with impossibilities. He can not tell what his mixture contains without a chemical analysis; and, as I have said, the law will not charge any man with an impossibility. Can you justify that decision on any legal reasoning, Mr. Corliss?

Mr. CORLISS. I do not think I am called upon to attempt to explain the language of the supreme court of the State of Michigan.

Mr. GROSVENOR. Now, gentlemen, it is that state of affairs which we desire to get away from when we say that a man should never be made a criminal, and subject, perhaps, to imprisonment for something which he absolutely could have no knowledge of; and therefore we ask you to make this penalty one of condemnation of the goods themselves.

Mr. COOMBS. In reference to that, suppose the goods were of such immaterial value that a condemnation suit would hardly be practicable; what would you do about that?

Mr. GROSVENOR. I undertake to say, sir, that under another section of this bill (I refer to the section giving the food commissioner authority to publish his findings), which is found on page 2, line 24, it is provided that he shall only report to the courts the result of the examination hereinbefore provided for and issue such bulletins announcing such result as he may deem proper or that Congress may require. Publication as has been found in Michigan, at any rate, where they issue a bulletin giving the result of their findings, with the names of the parties who manufactured and sold the goods. If under that language the national commissioner should issue bulletins stating what has been found, with the names of the manufacturers, it would be extensively copied in the daily press—which reminds me of a work which has lately been copied. In this case that I refer to there was an examination made of the different cereal products, an analysis made, and a statement made as to their nutritive value, and that was published widely through the daily press. I believe such action as that would protect the people and drive any bad goods out of the market.

Mr. COOMBS. Then you seek publicity—you want publicity with reference to all these frauds?

Mr. GROSVENOR. Not as to frauds. The deleterious—

Mr. COOMBS. Then your idea is that you would make it notorious and thus protect the public?

Mr. GROSVENOR. Where the quantity of goods is so small that it would not be worth while starting suit for condemnation.

Mr. COOMBS. Now, if that is the idea, why could it not be better done by a system which would contain the power to make publications, to make notorious what is going on in the commercial world, without resorting to lawsuits and to the courts?

Mr. GROSVENOR. If the gentleman will pardon me for the digression, I have had four years' experience as food commissioner of the State of Michigan, with authority to issue that bulletin, and I say frankly that the publicity given to that bulletin in the State of Michigan has amounted to a great deal more than the penalties, either fear of penalties or their enforcement.

Mr. STEWART. Would you not add another provision, that in case the intent can be proved, circumstantially or directly, that this punishment would result—where you can prove the intent on the part of the vendor of the goods?

Mr. GROSVENOR. I think that would be a wise provision, but in the four years I speak of, in the prosecution of over 500 cases, I never knew of but one case where we could show the intent.

Mr. STEWART. It would not hurt to make that provision?

Mr. GROSVENOR. I see no objection to it.

Mr. STEWART. And possibly it might do good in some cases.

Mr. GROSVENOR. Now, gentlemen, bearing in mind that of these three kinds of adulteration the gainful one for deception and fraudulent purpose is, my statement for it, the only one which it is competent for a lawmaking power to regulate, I wish to say that I do not believe it is necessary, and it is not necessary for this reason: I believe that quality and merit tell, and that in this world both goods and men find their level. As an instance of that I would like to call the attention of the committee to a certain product. I do not care to name the product, although I am perfectly willing to do it if you want me to do it. This product was manufactured in New York City a few years ago and spread broadcast over this country. It was a compound. It was a substance which every family uses, and uses largely. I do not mean now that because it was a compound that it was an adulteration. It was not an adulteration. It was one of these substances which has an ordinary regular name, but consists really of one or more ingredients. Let us say it was a jelly. It was not, but let us call it a jelly. That consists of fruit and sugar. This was shipped broadly through the country and sold to the retailers at a very, very low price, perhaps a tenth part of what the ordinary brand of the same kind of a product sold for. The papers were full of advertisements. "You can get jelly at our store for so much." Now jelly is jelly, in that particular product; and merchants bought largely of it because all brands of jelly had sold well, and they believed that no jelly could be made that would not sell. But that stuff was so absolutely worthless—although not injurious to health—that it drove itself off of the market in six months because it was not producing a given result.

Mr. CORLISS. What harm was the result of that?

Mr. GROSVENOR. Sir?

Mr. CORLISS. What was the harm of that?

Mr. GROSVENOR. The harm of the goods being sold?

Mr. CORLISS. Yes.

Mr. GROSVENOR. In a way, it took the money of the retailer, and many of them could not get it back and could not sell the goods. They could not sell but one can in one place, and oftentimes, I may say, it is customary to bring that particular kind of goods back if you do not like it.

Mr. STEWART. Do you not think the retailer deserved to lose that if he bought it at such a low price and made such a large profit on it, or expected to make such a large profit; do you not think that there should have been a suspicion in his mind?

Mr. GROSVENOR. I think there should have been.

Mr. CORLISS. You give that as an illustration of the evils of that proposition—the Government going into the question of all kinds of impositions.

Mr. GROSVENOR. Yes. If you are going to start there there is no end to it; you can go to every branch of trade.

Mr. RICHARDSON. You have mentioned jelly there?

Mr. GROSVENOR. Yes, sir.

Mr. RICHARDSON. The ordinary, common jelly that comes into the homes of all the people of the country is composed of what?

Mr. GROSVENOR. I am not a manufacturer, but in my judgment it is composed of pure fruit and sugar and glucose or pure food and sugar alone with a very small percentage of glucose to keep it from crystallizing, or a small percentage of sugar and a large percentage of glucose, and occasionally some coloring matter.

Mr. RICHARDSON. You do not think it ought to have the label of what is in there on it?

Mr. GROSVENOR. No, sir.

Mr. RICHARDSON. Because it does not injure anybody?

Mr. GROSVENOR. No, sir.

Mr. RICHARDSON. And if they do put it in, in quantities not so strong and so on, a man has a right to buy in a greater or less degree as he pleases?

Mr. GROSVENOR. Yes; we are all in a different purchasing power condition.

Mr. STEWART. Would not a purchaser pay less for an article if he thought it contained less fruit than he was led to believe it contained; would he not offer less for the article, and would not he offer more for it if he thought it contained the real article that he wanted?

Mr. GROSVENOR. Yes.

Mr. STEWART. Then, is there not a deception? Why should not the label contain the ingredients?

Mr. GROSVENOR. Because in my judgment your law then becomes one to regulate commercial conditions, business profits. If you leave it alone the public will find, just as they find to-day, a certain named shoe is a good shoe, and they go back and buy it because they know that that named shoe is what they want. So, they know a certain jelly pleasant to the taste and they like it.

Mr. RICHARDSON. Then your real meaning is that the label of it, and so forth, affects the sale of it?

Mr. STEWART. Ought we to protect the product or protect the health of people?

Mr. GROSVENOR. My answer to that is let us go down the line and take every manufactured product there is in the country and protect them in the same way.

Mr. RYAN. Not confine it to food?

Mr. GROSVENOR. Not confine it to certain forms of food which people want, and which are not deceptions, and which regulate themselves just as different grades of brooms or shoes or anything else regulate themselves.

The CHAIRMAN. Take the illustration that you offered just now. Suppose that that jelly that I want to buy is 40 per cent of sugar and 10 per cent of glucose. Now, you manufacture a jelly where you reverse those proportions. You have it under the same brand as the one I have been accustomed to buy and that I like. Why should not I be protected from that fraud, and why should not the dealer or the manufacturer that wants to impose the fraud and wants to have it appear that his goods are of the better quality, be compelled to show what is in that jar of jelly?

Mr. GROSVENOR. I do not wish to seem to evade the question, sir, but there can be no denying the fact that a jelly containing 40 per cent glucose and 10 per cent sugar is just as different to anyone's taste as can be from one containing 40 per cent sugar and 10 per cent glucose, and the purchaser himself will know.

The CHAIRMAN. But I do not taste jellies until I get home with them; I do not unwrap the package before I get home, and I can not tell whether I am getting the thing I want or not until I do get home.

Mr. GROSVENOR. I am prepared to admit that the first jar of jelly—

The CHAIRMAN. The second jar, and the third, too.

Mr. GROSVENOR. No, sir; because you would not buy that brand again.

The CHAIRMAN. Well, I don't know; if I had had goods of that brand I might experiment again, and I might strike a dishonest dealer.

Mr. ADAMSON. I think the thing the chairman would like to know is whether there are different brands to indicate the different varieties of jelly made by the same firm?

Mr. GROSVENOR. Generally every manufacturer puts up two or three different grades at two or three different prices under two or three brand names. When I make the statement that there is a natural law to regulate these things, and they are regulated just as I mentioned a few minutes ago as the brand of a pair of shoes, I know it will be the same way in the case of jelly.

The CHAIRMAN. Your illustration is not a fair one, because in buying shoes a man's eyes are his market; he can look and examine them, and most men are supposed to have some knowledge of shoes; but the average head of a house does not know the intricacies of the trade in regard to jellies. It is much easier to deceive in the one case than it is in the other case.

Mr. GROSVENOR. Then, let us take the question of cement, which business is growing to a large extent in this country. Some cement is worthless and some is very good, and the average man can tell nothing about it.

The CHAIRMAN. I would say that in that case the average man who knows nothing about it would be protected and helped if the manufacturer of that worthless cement was compelled to show by what means he was attempting to impose upon the communities.

Mr. CORLISS. Mr. Grosvenor, is it not true in your experience of four years as food commissioner of Michigan that the purchasers of food very largely depend upon the integrity of the retailer?

Mr. GROSVENOR. Further than that, Mr. Corliss, every retailer has to guarantee his goods nowadays in order to sell them. I am speaking of the country in which I live—

Mr. CORLISS. Is it not true that 90 per cent of the consumers buy the goods they desire for their table without looking or knowing of the brand, but relying upon their retailer to send them perfect goods; would not that be true if we had any such law as they propose here to stop fraud?

Mr. GROSVENOR. Yes, sir; although I won't grant that 90 per cent buy without looking at the brand; but they do buy, especially if they buy a new brand, upon the integrity of the dealer, upon his known reputation, and under this guaranty that I speak of.

Mr. STEWART. Do you not know that it is shown by advanced chemistry that glucose is far more injurious to the stomach than sugar?

Mr. GROSVENOR. Injurious?

Mr. STEWART. Yes.

Mr. GROSVENOR. On the contrary, my understanding of it is that glucose is far preferable to sugar.

Mr. STEWART. Take a person with diabetes; he should avoid all sugar or glucose matter. Now, in order to protect him, should not the label state as to jellies?

Mr. GROSVENOR. He should be under a physician's charge and do as he tells him.

Mr. STEWART. He likes jellies—

Mr. GROSVENOR. I am speaking of well men.

Mr. STEWART. About two people in ten are probably troubled with diabetes or some kidney trouble. Why should not the label state the ingredients for the benefit of those people?

Mr. GROSVENOR. I am not talking of sick men.

Mr. STEWART. Sick men like jellies they resort to jellies they can not eat meat and solid foods.

Mr. GROSVENOR. I can not answer the question as to the effect upon the system, because I am not a physiologist.

Mr. STEWART. Do you not know the reason they do not want this label is that they do not want the people to know how much money they are making?

Mr. GROSVENOR. I do not believe the label can inform a man as to how much a manufacturer is making.

Mr. STEWART. It would affect the market price of the article?

Mr. GROSVENOR. No, sir.

Mr. STEWART. Would it not affect its selling price in the market?

Mr. GROSVENOR. No, sir; for the reason I have just stated; that true merit, the excellence of the goods, will place them in a certain class—their individuality.

Mr. STEWART. But you would kill a lot of people in every community before it gets down to that.

Mr. GROSVENOR. That is what we want to protect you against in the Corliss bill—the killing of people.

Mr. STEWART. But before that you will have killed a lot of people?

Mr. GROSVENOR. There is no bill before this committee, or any State, or Congress that is so stringent against injurious adulterations as this same Corliss bill. It goes further than any other bill. Its language is stronger, in my judgement, than any other bill. Therefore, when you are talking about injurious substances, we believe we have a stronger bill here than any other law, or proposed State law, or continental law.

Mr. STEWART. I think you could do more good than any other witness before the committee if you could convince us why the ingredients of any article sold should not appear upon the label. If you can show that satisfactory to the committee, you have won your case.

Mr. GROSVENOR. I am only here, sir, to give a result of my observation and experience along this line. There is another factor in that matter that has not been stated and is not appreciated, and that is the competition which exists between traveling salesmen, if you please, they making a practice of exposing adulterated goods. They carry with them these bulletins and warn the trade, and, in my judgment, it is a very effective way of warning the trade.

Mr. RICHARDSON. Do you believe, Mr. Grosvenor, if a purchaser was to go into a store and he found different jellies on the shelf, one marked with the ingredients, and so forth and so on, and another one not marked—the two articles there—do you not believe that the purchaser would buy the article that was labeled showing what was in it, and in preference to the article not labeled; and do you not think that would affect the price? You said, just now, that it would not affect the price, if I understood you correctly.

Mr. GROSVENOR. I do not think it would, sir.

Mr. RICHARDSON. Don't you believe that a man going in under those circumstances, finding all those ingredients put in the jelly, and in the proportion that you said was injurious, and so forth, or might be injurious, he would prefer paying his money for the article that had fewer of the ingredients in it, and would not that affect the price?

Mr. GROSVENOR. If the purchaser had a correct idea of what was proper in a jelly and what made the best jelly for his own taste, I grant you that might be so.

Mr. RICHARDSON. He would have to be a chemist then?

Mr. STEWART. You assume that he does not know anything about it. You assume that the people have not the ordinary intelligence of the grocer.

Mr. GROSVENOR. I can illustrate that by dropping jelly, because that is something that every housewife makes and every woman has a good idea of; but let us take a baking powder. Suppose the formula of the baking powder is on the can, as is required in a great many States; what knowledge has the buyer of the nature of that baking powder?

Mr. STEWART. They can easily inform themselves.

Mr. GROSVENOR. I grant that, sir; but when you go into that can you go into the whole system of labeling? If you are going to put the formula on the package and give to any one man or set of men the power to regulate your label, you will have another set of labels

on top of the different State food laws, and the label which may be ordained the correct one here in the city of Washington may absolutely prohibit the sale of goods in States.

Mr. STEWART. You are asking now to prohibit certain things against you, but you do not want to be regulated at all as to your conduct.

Mr. GROSVENOR. I do not understand.

Mr. STEWART. You are asking that we should put safeguards around you, but you do not want to be regulated as to what you shall do. We simply ask you to put a label on your goods, so that everybody who buys them will recognize what he is buying; but you do not want to be regulated at all; you want all the regulations against other people and none against yourselves.

Mr. GROSVENOR. I do not understand what you mean.

Mr. STEWART. I think I made it pretty clear.

Mr. GROSVENOR. I have not asked for regulations.

Mr. STEWART. Yes; you are asking us to pass this bill, which will protect you, and yet you refuse to put a label on your goods stating what the ingredients are. You want to assume, and have it assumed, that your goods are good goods, and yet you will not tell the community what the ingredients are, and you want to be protected against certain competitors.

Mr. GROSVENOR. I do not believe if a law could be framed which shall require a commission to require a man to tell what is in his package, that there would be opposition to it, provided you did not give any man or set of men the right to legislate that man or set of men out of existence by his or their construction of that law.

Mr. RICHARDSON. You are opposed, then, to the commissioner having the power to regulate the standard?

Mr. GROSVENOR. And the label, sir.

The CHAIRMAN. What are you willing to allow the legislative branch to regulate in the matter of this business?

Mr. GROSVENOR. I am willing that any legislation should be passed which shall state plainly by its terms just what is required.

The CHAIRMAN. Now, what would you have required?

Mr. GROSVENOR. No lawyer, unless he has made a study of it, and no business man, although he may have made a study of it, can tell under these food laws what is required; and I say the manufacturers, the reputable ones—and I am sure that there are none others here—are willing for any legislation which when they consider and which when they read will be plain to them, so that they will know what is required; but I believe they are opposed to a man to any system which will give the food commissioners the power to say under what labels they shall sell the goods.

As to the second question: You say, How can this be done? In one of two ways, in my judgment. First, by a specific law for each article. Take jelly, and say in the section just what shall constitute jelly; take baking powder, and say just what shall constitute baking powder; take pepper, and take every one of the food products all the way through and name them, and then we will know what is required, and we would not be at the mercy of the caprice or bad judgment of any one man or set of men.

Mr. ADAMS. You want the law to specify that without leaving it to the Department to establish the standard?

Mr. GROSVENOR. Yes; because those standards, as has been shown, in the State laws, continually change. Men holding offices die but seldom, but they do sometimes die, and they are often removed, and whenever you get a new commissioner you get a new set of rules, and sometimes it is not necessary even to get a new commissioner to get a new set of rules. I know one case where a commissioner published a ruling regarding a certain product and he gave everybody six months to get their goods to conform to that, and inside of thirty days he was compelled to change it by reason of another construction of the law given to him by the Attorney-General, and so every man handling those goods had to take his goods out of the case and relabel them, and many of them trusted to the retailers to put the labels on and they were not put on and there was no end of confusion,

The CHAIRMAN. You spoke a little while ago of a criminal statute on the subject. Do you regard this bill, No. 12348, as a criminal statute?

Mr. GROSVENOR. If the gentleman desires me to express an opinion as a lawyer, I will say that I can not do it; I do not know whether this is a criminal statute or not.

The CHAIRMAN. Do you find any prohibition in it of any kind?

Mr. GROSVENOR. Against adulterated food, yes, sir.

The CHAIRMAN. Do you?

Mr. GROSVENOR. Against injuriously adulterated food, yes, sir.

The CHAIRMAN. I have not been able to find that. Do you find any penalty in it?

Mr. GROSVENOR. Against the goods? Yes, sir.

The CHAIRMAN. Against the person?

Mr. GROSVENOR. No, sir. I do not believe any should be put in.

Mr. COOMBS. There is no penalty in this at all, as I understand it.

The CHAIRMAN. None proposed that I have been able to find. Under this bill a man can do anything he pleases, and if his conduct does not conflict with some statute already existing, or with the common law, you could not possibly punish him or prohibit him from doing that thing.

Mr. CORLISS. You can prohibit him from manufacturing or selling foods that are deleterious to health.

The CHAIRMAN. It simply authorizes this: That if you can get hold of his goods you can confiscate them, and then the Government sells them to somebody else. The Government sells them instead of an individual selling them, and I do not know that that affects their deleteriousness at all. It is not the person that sells, it is the thing that is sold, that may be harmful.

Mr. COOMBS. Does this provide that after condemnation they can be sold?

The CHAIRMAN. Yes, it authorizes their sale.

Mr. COOMBS. Is the purchaser supposed to consume it all himself?

The CHAIRMAN. I assume that if the Government's vendee should sell the goods, that then the Government would confiscate again and again sell them.

Mr. GROSVENOR. I believe, sir, that that condemnation—

Mr. RICHARDSON. Does this bill have any of the provisions of the other bills, that the food commissioner shall certify to labels of a certain form?

The CHAIRMAN. No.

Mr. RICHARDSON. It is the duty of the prosecuting attorney to enforce the penalties provided.

(Mr. Richardson read the provision of the bill covering this subject.)
The CHAIRMAN. That is confiscation.

Mr. CORLISS. That is confiscation of the property.

The CHAIRMAN. It would furnish employment for the district attorney and the courts in taking up the round of confiscations.

Mr. GROSVENOR. May I say a word on this subject?

The CHAIRMAN. Certainly. I did not want to interfere with your line of discussion.

Mr. GROSVENOR. I do not believe that anyone believes that the Government could turn around and sell these food products for foods.

The CHAIRMAN. But the statute is peremptory.

Mr. GROSVENOR. Yes; but they could sell stuff for nails, for wagon grease.

The CHAIRMAN. Oh!

Mr. GROSVENOR. There are a great many channels in which they can be disposed of. The statute could easily be amended to prohibit the Government selling them for food.

The CHAIRMAN. Do you know anything about the history of this bill, who advocates it, Mr. Grosvenor; what association of manufacturers or dealers advocate it?

Mr. CORLISS. I think he has answered that.

Mr. GROSVENOR. Excuse me, I have not answered the question fully. This bill is formally indorsed as to its regulative features—not as to its administrative features—as contained in the two sections 4 and 5. They are practically the same as in the Mann bill.

The CHAIRMAN. Do you know who drew it?

Mr. GROSVENOR. Yes, sir.

The CHAIRMAN. Will you state?

Mr. GROSVENOR. It was drawn by the food committee of the Association of Manufacturers and Distributors of Food Products.

The CHAIRMAN. Who are the committee, please?

Mr. GROSVENOR. Mr. H. H. Logan, of Boston; Mr. F. W. Huffen, Mr. Charles Arms, of New York; Mr. V. S. Anderson, of Camden; Mr. John Wysen, of Philadelphia, and Mr. W. H. Williams, of Detroit. I stated before you came in, sir, that this bill claimed nothing original, but was, as we believed, the best part of the different bills proposed before this and other committees in this Congress.

The CHAIRMAN. It being drafted, what was then done with it; was it submitted to the body at an annual meeting or other meeting?

Mr. GROSVENOR. It was submitted to a special meeting of the association; it was submitted to other associations who had indorsed what is before your committee as the Mann bill. Understand, we had substituted the administrative features of another bill.

The CHAIRMAN. What other bill?

Mr. GROSVENOR. I believe it is part of the Hepburn bill, and a part of the Warner bill now before the Committee on Agriculture.

The CHAIRMAN. It is the bill of the Pure-Food Congress, is it not?

Mr. GROSVENOR. Which one?

The CHAIRMAN. The one which had previously been indorsed by these bodies.

Mr. GROSVENOR. The last Pure-Food Congress met two years ago this month, and at that time I had the pleasure of attending every

session of the Pure-Food Congress. A bare majority of that congress indorsed what was then known as the Brosius bill.

Mr. WEDDERBURN. I wish to say that the very question that is up now was up before that congress, and instead of a bare majority there was a majority of three-fourths. Dr. Wiley says nine-tenths, and other gentlemen here know that I am correct in that statement.

Mr. GROSVENOR. The gentleman is now proceeding upon the assumption that those who at that time indorsed the—

Several GENTLEMEN. Brosius bill.

Mr. GROSVENOR. No, sir; not the Brosius bill; the bill which was presented by a member from Wisconsin, and afterwards presented in Congress. You gentlemen would remember it if you would get your caps on. It was not the Babcock bill, although it may have been the Babcock bill. It was presented by some Wisconsin member, and the difference between that bill and the Brosius bill lay in its administrative features. And when I say a bare majority I am pretty close to the truth, because the vote was 58 to 44, 44 voting for the Babcock bill, if it was the Babcock bill. This is indorsed by this association. It consists, if I remember right, of thirty-eight manufacturers in the East. You might say the East, although its membership extends as far as Michigan and represents a great deal of money. It is indorsed by the Illinois Manufacturers' Exchange, which, I understand, is a very large organization. It is indorsed by the Commercial Exchange of Chicago, which embraces practically the food distributors and manufacturers of food around Chicago—

The CHAIRMAN. Have you in your custody the action, the resolutions, or other methods by which these associations made these indorsements?

Mr. GROSVENOR. I have, with possibly one exception.

The CHAIRMAN. Will you lay them before the committee?

Mr. GROSVENOR. Yes, sir. They are in my room.

This bill was indorsed by the National Association of Wholesale Grocers at a meeting in New York City the latter part of November, the 18th or 20th, I think. Understand, I am making this statement advisedly.

The CHAIRMAN. When you say "this bill," do you mean the bill 12348, or the bill earlier introduced by Mr. Mann? This bill you are now speaking of was introduced on Monday by Mr. Corliss.

Mr. GROSVENOR. Yes. I referred to the regulative features, sections 3 and 4, of this bill. I should have made that plainer, perhaps. It was indorsed in another bill known as the Mann bill, but those same interests have since, I think, in every instance indorsed, and their representatives here have thoroughly indorsed, and will ask your committee to report bill 12348.

The CHAIRMAN. Now, let us see if I understand; all of these associations, being dealers, desire that kind of legislation that neither prohibits nor punishes?

Mr. GROSVENOR. I must take exception to the last two words, because I can not agree with you. They indorse this legislation. I claim it prohibits everything that should be prohibited and punishes in the proper way. It is indorsed by the National Association of Wholesale Grocers, which action was taken at its meeting in New York, and has been indorsed since, I believe, by the executive committee of that association, and I believe one of the committee is here

to indorse it. It was put in charge of the executive committee, I believe. It was indorsed by the retail grocers in their meeting in Milwaukee in January. This association represents 29 States and 79,000 retail grocers. It is indorsed in a personal way by a great many outside of any organization.

The CHAIRMAN. Have you the indorsement of any purchasers and consumers?

Mr. GROSVENOR. I have my own, sir.

The CHAIRMAN. You might also be classed in the other class, might you not?

Mr. GROSVENOR. No, sir. I am not a manufacturer. I am here, of course, representing manufacturers. No, sir; I know of no indorsements by consumers; nor do I know of any such indorsements for any bill.

I might say that some little time ago, in order to get away from this labeling proposition, in my judgment this giving to a man or one set of men power to state what the labels shall be, under which a man must do business—

The CHAIRMAN. Let me interrupt you. Do you know of any law that proposes that; requiring what the labels shall be, other than that the labels shall state what the contents of that compound may be?

Mr. GROSVENOR. Yes, sir. When I started off, I read the Michigan food laws. I think the gentleman was not here when I did that. I stated as a general proposition that it was identical with the Wisconsin law, the Illinois law, the Ohio law, and the Indiana law, and still every one of those States, under the power given the food commissioner—and the language is less broad than some of those bills giving Congress the power—produce certain articles that can not be produced in any two States under the same label. It is to avoid those conditions, and I said, further, that if the national law should give the same power and the national commissioner should say, for instance, that a certain jelly should be labeled compound—and he would have that power under a national law—that while it was permissible to ship it from Ohio to Kentucky, yet after it reached Kentucky it could not be sold.

The CHAIRMAN. No condition of that kind could arise under any bill that is before Congress now?

Mr. GROSVENOR. Am I permitted now to consider the bills which you read yesterday?

Several MEMBERS. Go ahead.

Mr. GROSVENOR. I say, Mr. Chairman, am I permitted to consider the bills whose numbers you read yesterday?

The CHAIRMAN. Yes, sir.

Mr. GROSVENOR. Yes, I think so. I think particularly under this bill, known as No. 93052. I think equally so under No. 3109. I think such a power is prescribed under these bills, and I know food commissioners have prescribed labels under less broad language than this.

The CHAIRMAN. The power is simply that there shall be a label that shall state the contents of that package.

Mr. GROSVENOR. This bill absolutely prohibits under one section the sale of imitation products under any name. An imitation might be held by the Commissioner to come under any one of three sections in bill No. 3109, in my judgment. The point I want to bring out the strongest is to avoid the very condition that now exists and state that

we object to the passage of that kind of a law, the labeling law. And in my judgment there are but two ways to get away from it. First, to pass a comprehensive law that shall contain a section relative to each product right down through the whole list of products. A gentleman stated yesterday that such a law existed in some continental country, in some country of Europe. It is possible to get away from the labeling process in that way, and I do not believe that any manufacturer would object under such a law, if he could only know what he is expected to do under this law. The second is the passage of some such bill as the Corliss bill, which simply prohibits injurious adulterated substances to be used in food products and tells exactly what is to be expected.

Mr. COOMBS. How does your law reach everybody in the State who makes goods in the State and sells those goods in the State?

Mr. GROSVENOR. This law?

Mr. COOMBS. Your law or any other national law.

Mr. GROSVENOR. I do not think it could affect goods sold and consumed in one State. It would not apply in such a case.

Mr. COOMBS. It is simply a matter regulating exchange of goods between the States?

Mr. GROSVENOR. Yes, sir; it being claimed now that goods are transported from one State to another in original packages and do not become subject to that State's food laws.

Mr. COOMBS. Let me ask you this: The different States, you say, except three, and Territories also, have pure-food laws. How do they work?

Mr. GROSVENOR. They are dead letters except where a department is established for their enforcement. To pass a law and not make it anyone's business to enforce it does not amount to anything. There is no denying the fact that in such cases they are absolutely dead letters.

Mr. COOMBS. Is there any law that is not a dead letter that is without a penal clause in it—that is, upon the lines of the proposed Corliss law?

Mr. GROSVENOR. That is, as a State measure?

Mr. COOMBS. As a State measure.

Mr. GROSVENOR. I think not.

Mr. Chairman, do you wish these indorsements which you said you wished presented?

The CHAIRMAN. You may suit your convenience about that.

Mr. GROSVENOR. I am desiring to suit yours.

The CHAIRMAN. Any time before we conclude the printing of our hearing will do.

Mr. GROSVENOR. I will try to have them here at the next meeting.

STATEMENT OF MR. GEORGE A. SCHERER, REPRESENTING THE NATIONAL ASSOCIATION OF RETAIL GROCERS AS ITS CHAIRMAN ON FOOD LEGISLATION.

Mr. SCHERER. Mr. Chairman and gentlemen, I desire to state to your committee that our National Association of Retail Grocers, organized during the World's Fair in 1893 at Chicago, from that very time on has been interested and busy to make popular opinion and to get a national food law. We have been represented at the different food con-

gresses, and while as grocers we were not versed at that time, or even later on, very much in what a food law is, or how it operates, or what it should be, we went along on lines laid down by men who were more able than we were, and I think their work was a good one. I believe if it was not for them we would not be here to-day. It paved the road to something that the country needs. But I want to say to the chairman and the gentlemen of the committee that we have given the matter the consideration of two congresses and the introduction of different State laws from that time on a good deal of attention, and your humble servant is one among others of the State association of Illinois to claim the credit of having upon the statute books of Illinois a food law. So you can see our interest, our earnest interest, for such a law.

At the Champagne University we came together, the wholesale and retail men, the manufacturers of food products and the drug men, and the seed men. We finally eliminated drugs from our bill and eliminated seed. We saw it was a cumbersome affair. But we persisted in having a food law. We found out the operation of food laws after getting a food law, and I want to say to the chairman and the gentlemen it has radically revolutionized our ideas as to some State food laws and what a proper food law should be. It is your humble servant's opinion—and I want to say the opinion of a great many, if not all, of the retailers of this country—that a food law and the different food laws that are now in existence are going entirely beyond the boundary which we believe in all candor should be the object of food laws.

The fundamental principle in our estimation, Mr. Chairman and gentlemen, is that all people have a right to ask from Congress and from our State administrations protection against a latent property that neither the retailer in the ordinary way—not speaking of impossibilities—and even the wholesaler can detect that may be injurious to the health of his patrons. We are eating foods ourselves; we have families, and we are seriously interested that no such latent property of injurious materials shall be introduced into our stomachs to make it necessary to call a physician, and that we may possibly succumb to a condition of that kind.

For that reason we ask for protection, and we believe we are entitled to it; and when a food law has taken care of that scope, of that intent, of that need, of that desire, of that motive that we all are here asking from you and from our State governments the protection, I will believe it has fulfilled its entire mission.

And in order to bring before your body for consideration the views in a practical manner, we, among others, have taken this matter under consideration, and went in and indorsed the bill and helped form a bill for your consideration to bring practically before you what the wants and the needs of the people are, and the needs and wants of those that are close to them.

For an illustration—I am not prepared to, and it is not necessary for me to go into the merits of this bill, but for an illustration I know a law, our Illinois law, that has a similar section in regard to adulterations and mixtures, and our commissioner made a ruling. He sent it out broadcast. He attends our State conventions and we supported him, and we assist him in every manner we can; but he sent out a ruling and I got that; I was not quite satisfied, and I went up to

his office and found out what I must do. He had just lately given out the definition of a ruling that bears on this subject. If I buy, for instance, a pail of jelly—I will use the same terms you have given here—and that is branded a compound, a mixture, that complies with the law.

Now, I asked him, "Mr. Commissioner, in selling that by the pound, or by the 20-pound or 30-pound or 40-pound lot or jar or pail, if you please, what is necessary?" He said every man that buys a pound of jelly or preserves that is not the pure food prescribed by law must have a pasteur on it, marking the package, marking the pound or half pound or 5 cents' worth; that on every such quantity sold there shall be a label the same as on the original package. If a person comes to my store—and one illustration will do for a dozen—and buys a gallon or a half a gallon or 10 cents' worth of vinegar, it is not enough that that shall be branded "colored vinegar." I have to have a pasteur that I shall put on the vinegar purchased. I tell the ladies that come to my store that it is not enough that I have it branded "distilled colored vinegar," but I have to take a pasteur and put it on the package that they buy, showing that it is distilled colored vinegar. If I do not do that, what is the result? The result is I am taken into court and I am, according to the language of the law, a guilty party, guilty of violating the law, committing a misdemeanor, and I am subject to the fines prescribed, similar to those set out in the Brosius bill—I do not know just what they are, but similar to those.

Now, for another illustration. Just lately the assistant food commissioner was in our city. He came to my store; I know him well. I talked with him leisurely, and as he was going out he looked at our show case, and he says: "You have some cartoons of goods here." "Well, what is it?" said I. He looked them over. They were high-grade goods. When I say high-grade goods I mean, for instance, Uneeda Biscuits, Oatmeal Wafers, Graham Wafers, products of the National Biscuit Company. They are branded in such a way that everybody knows what they are. They are high-priced goods. Now, that man brings suit against me under the law, and I am a criminal in the eyes of the public, when I have lived a lifetime trying to hold up a reputation that I can be proud of, that I may be a man among men. But no; the criminal code or records of our court will show that I was committed, and that I committed a misdemeanor. I can not go and tell everybody that that was a mere matter of a technical point, because that goes on to describe what we must do under a question of pure food, and I assure you we earnestly protest against any law which will go so far as to bring this labeling proposition onto goods other than to prohibit injurious goods to be sold.

The CHAIRMAN. The time is expired. I hope some of you will be here to-morrow, although the whole of the time will not be devoted to this subject. To-morrow has already been set apart for a hearing of the board of health of Louisiana.

Adjourned.

THURSDAY, March 13, 1892.

The hearings on the pure-food legislation were continued at 11 o'clock a. m., Hon. William P. Hepburn in the chair.

STATEMENT OF MR. GEORGE A. SCHERER—Continued.

Mr. SCHERER. Mr. Chairman and gentlemen of the committee, with your permission I would like to amend a statement I made yesterday, which was not entirely clear to my own mind. I stated that our assistant food commissioner bought three cartoons of the National Biscuit Company's manufacture; one a Uneeda biscuit, another a graham wafer, and, third, an oatmeal wafer; and I also stated that the name of the National Biscuit Company was in large letters on the package in several places, on each package, and that we had a plant in the city of Peoria, and that our retailers and the public in general know well who they are; but I failed to state to you why we stand convicted, by *prima facie* evidence, in the court as criminals on those goods, and I would state that the basis of that conviction is that the place (the address) is not on the package. I am still talking about the operation of our Illinois law in comparison with what we expect from food laws, or State laws that we have come in contact with, for example, our State.

When our law went into effect we asked the commissioners about the numerous goods we had on hand. One among others I asked Dr. Eaton, the chief chemist of the State, of the food department, in regard to a certain jam that we are handling, and which we had a considerable quantity of on the shelf. He says, "We have that in our office, it has been examined, it contains glucose, and you will now have to label it 'imitation' if you don't want to be subject to prosecution." I went back and did so, among other recommendations I had a pasteur struck off, "imitation" pasted over this article from a reputable packer whose goods we had sold in the store for years. I have been a retail grocer for thirty-two years and a great part of that time we have sold those goods, goods manufactured by this firm. The minute we put on that package "imitation" we couldn't sell any of it, and I believe I have got a good deal of that left yet. A customer coming in accustomed to use the goods, asked for the goods and I set them out. "What is that?" "Imitation," said I. "What is that?" "They are requirements of our law," says I, "that these goods must be branded 'imitation.'" "Is that so? Well, have you got anything else?"

The CHAIRMAN. Mr. Scherer, suppose that that label had simply stated the contents of that article, what would be the objection to that originally?

Mr. SCHERER. If the chairman will allow me, I will come to that a little later on. I am not an experienced talker, and neither am I a professional man; I am a grocer, and I have that marked down here among the notes that I will come to later on.

The CHAIRMAN. Very well, you may come to it in your own time, and when you please I would be glad if you would answer it.

Mr. SCHERER. I appreciate that very much, Mr. Chairman.

Now, it seems that the fact of that little label had a depressing effect upon the sale of that article.

I will state we have an article—and I will name it because it is selling well now throughout the country—it is Pet evaporated cream.

The commissioner also said to us: "You can not sell that." We had our views about it, having read the rulings and construing them in our own way, I had my doubts about it, and he says: "You must put a pasteur on that." I didn't see how we could do it. We wrote over the cans "milk," we wrote that under "Pet cream." Since then they have been laid on the shelf. That had the same effect. What is wrong? Nothing; only we have to label it, now, "milk" all right. So that went very slow. We have some of those cans of milk yet. Still, we are selling Pet cream, printed milk, all right. They have printed the new labels "Pet Cream and Milk." Condensed milk. The exact language I don't remember; I didn't come prepared to give it to you, but anyway, it is all right now; it goes to the same consumption.

And these are a few illustrations added to those yesterday, in regard to the provision of the law as to labeling. Now, I believe it is only fair to presume, since our Illinois commissioners and others of other States have set up a ruling which in the courts of Illinois and other States has been in our estimation additional legislation to the law, it is just as binding as the law. The courts have so decided. It is fair to presume that if bill No. 3109 should become a law that the department that would have the execution of that law, under the definition of mixtures and compounds, would set up a ruling on it for the information, probably, of the public; but it would be an additional law, probably, only in our minds. We are very much afraid of that.

As to labeling the contents. We believe that to label the contents of a package is one of the features that we object to, and we have some good reasons, we believe, to object to it. We take a stand against that. It is, in a measure, a destroyer of one of the trade features of our vocation. If we have a chocolate, or a cocoa, or a catsup, or a sauce, or a sirup, any of them, or all of them, if you please, and if they are labeled with their contents it is a feature that will destroy the sale of them: in fact will prejudice a great many people against them. In other words, if I have, for instance, any one of those article, or many more, on our shelves that have been favorably known and bought by my patrons, and in fact I have taken considerable interest and have recommended that article, showing to a lady customer that I have a catsup here that I like very much, or I will say that I have got a chocolate or a certain sauce, for instance, a chili sauce, of a reputable manufacturer, we have a very fine home-made chili sauce; and I want to say to this committee that it is almost impossible to sell the home-made chili sauce—the people want that other chili sauce. And yet I believe, according to the letter of the law, it would not stand; I doubt whether it is going to stand our Illinois law.

The commissioner told us he had not reached that; but when he reaches it he will decide whether we can sell it the way it is branded or not. There is the proposition. The lady customer says to her neighbor, "Why don't you go to Scherer to trade and get those goods; nice goods?" She had probably said many good words for me; had probably often said that she liked to trade at Scherer's or Smith's place very much. But if the contents of the article is marked on the package, they will consult, "Let us see." "Where is the bottle?" "Where is your label?" "Let us compare them." Looking down the line, "Oh, yes: that is all right; yes, you like that; that is al-

right; why, I don't know; I guess there is nothing in that; nothing in that at all; I can not see anything in it. The contents practically the same. Well, just take it for a trick. There is nothing in it. Don't see anything to go to Scherer's for," etc. In this sense, as I say, it destroys a trade feature. It discriminates one against another, although there is no material difference, no material difference at all. Only with regard to the palate, or with regard to fancy, or with regard to the particular recommendation it has been sold under, and so forth, that struck their idea; now a blend of any kind of goods acts the same way, but the fact is, it is the law that is a disturbing element; in truth, it created that impression.

Now then, we come to the next question of fraud and deception. Then we might say it raises the questions, What is fraud? What is deception? Let us see how far that will go. I mean how far that will go when you come to the rank and file of the people I represent, the grocer, the people that buy it, the consumers, how far that will go. Well, in the first place, I want to say to this committee, any vender of any food products has first to please his customers. He has to give them an article that will recommend itself. He has to stand for that article; he has to back it up. He has his reputation, with that of the article, at stake. Now, I want to say this to the committee. Not once, but many, many, many times it has happened to your humble servant that I have recommended an article which was superior to other goods used in its place, that I thought I was doing a service by giving them something I knew from experience and from investigation was better, recommending it to the family, they buying it on my recommendation, taking it home, and then they often would bring it back and say "We don't want it; nobody likes it." They bring it back, bring back the package. What do I do? I have to take it back. I can not do otherwise, because if I wouldn't I would loose a customer. My stock in trade is my customer, and I dare say I speak the sentiment of our people when I say their stock in trade is the good will and appreciation of their customers, by the service and of the honesty of the goods that we sell. That will take away all that feature, I believe, as far as deception and fraud is concerned.

You say, well, now, the price. Let us see about that. I do not understand how your people believe on the question of price. The purpose of a compound or a mixture or an imitation, as our law would call it, of course this bill would not call it that, and if that bill became a law our commissioner would say it was an imitation, and you could not sell it.

Now, if I have an article on sale my competitor soon knows what I am selling and my profits; he would begin with to get something that is nearly like it; if it is possible they get another brand, if it is possible they get something that they may have investigated, and they may think it is even better than mine, and the fact is he will sell it cheaper and make out I am a high-priced man; on account of getting an extra price, on account of its cheapness, of its component parts, my competitor calls me down in a hurry, and we go into price wars that go so far that the retail grocers and their progress and business development, so far as their profit is concerned, are not at the top of this nation, are not at the top of their vocations in mercantile life. They put in as many hours, I believe, as any, except the druggists, perhaps, as any vocation in mercantile life, and they put in as hard

work. They may not have the brains, I don't know; they may not have the ability, they may not have the education. As to the latter I would like to see, if such a thing was reasonable and tenable, that everyone would have to pass an examination before he could go into the grocery business, as a druggist has to do; then we would not have such a heedless competition. But everyone wants to get all the trade he can and he looks out that no one else is going to get a higher price, and I want to say to you, my dear friends, that I believe it is beyond a question of doubt that the avenue and market of competition in food products take care of fraud in regard to beating the people as to the contents of the package or price.

Excuse me; I am not versed well enough about this fraud question. I understand that my colleague, who preceded me, talked about the term of "fraud" in the dictionary. I would like to make an addition to that dictionary. I do not believe it is quite broad enough; I do not know what I should call it, but I will present it to you, gentlemen, if I understand it, and we will see whether or not it is fraud or whether it belongs in the category of fraud.

We have customers from the rural districts, and they sell their pork every year, and they have some to spare. They bring it to the venders of food products; we buy, probably, not so much any more now as we have in the past. We used to sell tons and tons of it every year, and a great many consumers want home-cured ham smoked in an old-fashioned smokehouse, and it is bought up with a relish, and they come in and want it; they want it, and they can not get enough of it. The reason for it is, the people are not going to bother themselves any more with slaughtering and smoking, on account of the price of prepared meats that is controlled by the packing interests, of the cheapness to some degree. But let me say to you, gentlemen, if a gentleman comes in and brings us some of that smoked bacon or ham, or, if you please, lard—

Mr. RICHARDSON. Or jelly.

Mr. SCHERER. We to-day sell tons of lard bought in the country, and we have standing orders to sell them for country lard. But what do they do often? They bring us some of these hams and bacon and lard from a pork that has run for many years as a boar. I want to say to you if you put that in your frying pan or cook it you will soon tell that there is something seriously wrong with it. Often the lard is so bad when they use it that it stinks them out of the house. They say, "My goodness, what kind of an imposition, Scherer, is this? What kind of a fraud have you done? It is dreadful!" I don't know whether it is a fraud or not, but it is something; something is wrong, and more so than even the product of the manufacturer. Excuse me. A lady customer comes in and wants fresh eggs. Fresh eggs! Now, you all have probably experienced an egg that has been exposed in the summer time for an hour or two only to the heat of the sun. It is fresh; they gathered the eggs last night. They gather them again every day; the country customer comes regularly to me twice a week, and so on; but the fact of the exposition of that egg to the heat of the sun for a number of hours makes it unfit for use—unpalatable. I send it to the customer, and then those eggs come back, and they say they can not eat them. "Those eggs! What have you done? I told you I wanted fresh eggs. What did you do such a thing as that on me for?" I don't know whether it is fraud or not, but whatever it is,

it is some kind of an addition to fraud that ought to go in as fraud—deception, if you please. Maybe you have experienced yourself the finest head of cabbage in the land; one that looks to be the finest. A lady comes in and turns it over, and looks at it, and takes it home. She finds it is rotten inside.

Mr. ADAMSON. Don't you think that results largely from ignorance?

Mr. SCHERER. The head of cabbage being rotten inside?

Mr. ADAMSON. No; about the eggs. Don't you think there is ignorance in that and it depends largely in knowing how to care for them?

Mr. RICHARDSON. There is no law that could label that egg.

Mr. SCHERER. No; but I was talking about the different kinds of fraud. Take it for what it is worth. I do not expect that you will coincide with all I say altogether, but I want you to take what I say for what it is worth.

Mr. RICHARDSON. Do you think the question of the egg is a fair illustration?

Mr. SCHERER. I am only talking of additional frauds.

Mr. RICHARDSON. That would not be an illustration of a fraud?

Mr. ADAMSON. I suppose there are a great many people in the country who would not pretend to know how much exposure to the sun would affect an egg. That is a matter that legislation here could hardly reach.

Mr. SCHERER. I do not expect you to reach it; but I want to say that I was raised in the country up to my twenty-first year. I was educated in the country schoolhouse. Often the hens will lay where you don't expect them to lay. You go to gather eggs; probably you have heard the noise—the report made by a hen after laying an egg—and the lady goes out and finds an egg there, or probably delays it an hour or two and then goes out and finds an egg, and she may say to the children, "I believe you will find a nest of eggs," and they go out and they find one.

Mr. RICHARDSON. You would have to regulate the hen on that; pass a law to regulate the hens.

Mr. ADAMSON. There is nothing more common in the country than to let a boar run for a while, then castrate him, fatten him, and make a big hog of him. You would have to be able to tell how late in life they could let a boar run, and then castrate him and fatten him, so as to make good meat.

Mr. SCHERER. That is correct. It happened about a year or so ago that one of our customers came in one day, and I saw on his face that something was wrong. He said, "Scherer, I have been trading with you a great many years, and we are always satisfied; but my household—the kitchen—have told you repeatedly, I understand, that we want no glucose. We eat sirup on our tables, but we want no glucose." Some of them call it corn sirup. "We don't want glucose, but in spite of that you seem to have sent us repeatedly, especially lately, glucose. Now," he says, "if this happens again we will play quits." I said, "Will you allow me?" He says, "I am a busy man, and I can not argue the question with you." I said, "Mr. Smith"—I will call him that, although that was not his name—"give me a show, will you?" "Well," he says, "all right; but is no use to argue the question with me," he says; and I says, "Give us a chance." "All right." I went back; I took a sugar bag; I put a little New Orleans sirup, a little sorghum, a little maple sirup on it, a little Boston

Revere sirup on it, a little corn sirup; I brought it to the front. He says, "That is what I don't want; I don't want to argue the question." "I beg your pardon; indulge with me for a minute."

He took out his knife and sampled one of the samples. I says, "I want you to taste them all." "Sorghum; I don't want it." The next one, "I don't want that." He tasted all along the line. When he came to Boston Revere refined sugar, he says, "That is the stuff you insist upon sending." "No; just taste it." He came back and tasted it again; he tasted the corn sirup. He says, "That is what we want; that is what we want." I said, "I beg your pardon, just on account of your orders that I must not send you any corn sirup, any glucose, we have reversed it and sent you Boston Revere's Refining Company sirup." "But," he says, "we don't want glucose." I says, "My dear friend, let me delay you another minute. We were over to the university, as I told you yesterday, in framing our State law at Champaign. There is a very fine chemist there. They have shown us glucose in all its phases, and, as I say, that is used as corn sirup for the market, and they have educated us that that is a more healthful article than sugar." I says, "On my honor, that is what they say." He says, "Send up these goods, but don't say a word to Mrs. Smith. Send up all the time these goods; that is what we want." Now, that is the way it comes. There is a prejudice existing. How are we to remedy them? I would like to right all evils at one lick, but I will not live long enough to see that done. Do we have to educate the public by legislation, and in bringing about certain reforms? You gentlemen here in passing laws know what is probably for the good of the country, although you may get censured for it for a while, but you have to investigate it; but when it does not seriously affect the country it is all right. But if you can pass a law at the same time that would accomplish all the purposes that the law stands for, and yet not disturb trade, why not pass such a law? It seems to me that this matter is of great importance.

Now, I want to say to you gentlemen that our association and members have been particularly instrumental in framing House bill No. 9352 and Senate bill No 2987. I stated to the committee yesterday, I believe, that we are as a whole for this bill.

Mr. COOMBS. That is the Mann bill?

Mr. SCHERER. The Mann bill; but we are now indorsing—

Mr. COOMBS. Ninety-three hundred and what?

Mr. RICHARDSON. 9352, he said.

Mr. SCHERER. 9352 is what we were instrumental in framing, and bill 2987—

Mr. MANN. 9352 is the bill which I introduced.

Mr. SCHERER. Yes, sir.

Mr. MANN. I understood that there were some amendments which you proposed, and that they were put into the new bill.

Mr. SCHERER. I am coming to that. We were particularly interested in sections 3 and 4, not on the administrative feature. Our people—the retail merchants—were not very seriously interested in the administrative features of the bill. I want to say we, in particular, were instrumental in the clause that eliminated the fines and prosecutions in that section, making a man a criminal; that is, in the present bill that we indorse now—12348—that is eliminated.

Mr. COOMBS. You do not believe in any penal clause at all, as I understand it?

Mr. SCHERER. No, we do not; and I will give you my reasons why we do not.

Mr. RICHARDSON. How are you going to prohibit it?

Mr. SCHERER. I will come to that if you will allow me.

Mr. RICHARDSON. Very well.

Mr. SCHERER. I want to say to you, gentlemen, that we almost stood alone—the retail grocers or representatives of grocers almost stood alone in the beginning on that, and I will give you my reasons for it. I know very well by our experience in the different States how those clauses operate in regard to fines and prosecutions and imprisonment. We said that is not what we want. Why? I have already told you, in my talk, how we are made criminals in court, on technical points, by the ruling of the commissioner, how that takes place; and I want to state to you gentlemen the experience of our different States, and especially Illinois. From the time the law has been in operation, nine innocent people have been convicted of a crime and a felony to one guilty one. We believe it is very poor legislation for any law to be so constructed that a man, on a technical point, should lose his standing and character in the community, which he has striven, perhaps for years, to establish.

Mr. COOMBS. You say convicted of a felony?

Mr. SCHERER. Excuse me, I mean a misdemeanor.

Mr. COOMBS. I thought, perhaps, that you were right; I was asking for information.

Mr. RICHARDSON. You say the old established rule is reversed, that the innocent man is convicted and the guilty one escapes?

Mr. SCHERER. Yes, sir; nine to one. But it is on a technical point of the law, as I stated in regard to the cartoons of the National Biscuit Company—not having the address on them—a high class of goods. They bring suit against me, or the man I referred to let me know that he would bring suit, and I will be a criminal in the eyes of the law when I get home.

Mr. RICHARDSON. Your courts of Illinois stand very high throughout the country. Do you make such a charge as that, that nine innocent men are convicted where one guilty man is convicted?

Mr. SCHERER. They convict them on the technical points. There was no address on that package.

The CHAIRMAN. Has anyone ever been convicted of such a thing as that, the offense or the alleged offense that you spoke of in the illustration you gave in regard to the goods of the National Biscuit Company?

Mr. SCHERER. Probably not on the cartoons of those goods, but other goods similar.

Mr. MANN. It has nearly as bad an effect on your business to be arrested as to be convicted?

Mr. SCHERER. Yes.

Mr. COOMBS. In all convictions the penalty has been a fine, has it not, and not imprisonment?

Mr. SCHERER. Yes, sir; but that is in the discretion of the court.

Now, I will explain to you the reasons why we believe that a national law on the lines of bill 3109 would operate almost similar. Place yourself in a position as a retailer (I will speak for my locality) in East St.

Louis. Almost their entire supply is bought in the city of St. Louis, in Missouri. You all realize the fact that telephone and mail service is almost perfection now, especially the latter. Take a merchant of my size, buying from \$3,000 to \$4,000 worth of goods a month. I dare say three-fourths of those goods are food products. Possibly that is not correct. It is only a guess, because I did not come here prepared in figuring, but the great majority, at least, are food products. Now, how many items do we buy? Well, I dare say when my monthly and weekly bills are put together that I have 150, possibly 200, invoices—I assure you I am not overestimating the bills—not all containing food—the invoices—but some food article in the invoice. We presume this is a law—3109.

Now, it happens that I have to have a written guaranty to protect me against any prosecution or fine. I like that section; we always stood up for the section when we could not get anything better. Now I say to Mr. Wholesaler or Mr. Dealer or Manufacturer, "I want thus and so; do not forget my guaranty." I say it again and again and again, "I want my guaranty." "Well, now, it is no use to go over the same ground again, Mr. Wholesaler, Mr. Manufacturer; understand when I buy a bill invoiced with food products I want it accompanied by a written guaranty." "All right," he says; "that is all right." Now, I get those goods. It becomes monotonous; I do not get that guaranty. "All right; I will send it to you." It comes again and again. He says, "All right; I will stand by you, anyway; it is no use to say any more." This is getting monotonous. A whole year would pass and I have hundreds of guaranties, one with every invoice, because I buy in small lots. We are not buying in carload lots as we used to; we do not do that. It is a quick turnover now in all things.

Now you see what the incumbrance is. Now, it happens for some reason or other, just as our assistant food commissioner came to Peoria, Mr. Commissioner says: "Hello, there, Mr. Inspector of the national food commission or department, we would like to have you come to St. Louis, something is wrong." We will take that for an example. All right. He goes down and he points out probably to him, or—take it on the other hand—he comes down of his own volition to look over the supplies of foods from the manufacturers and jobbers of foods in St. Louis or any other place. He comes of his own volition. What does he do? He has a suspicion. What does he do? Maybe it has been pointed out to him. He follows it up to me. Something is put off at my door. Supposing I am an East St. Louis merchant. Very well. Something I bought yesterday at St. Louis. The inspector comes along. "I am going to investigate that package or that shipment." Just investigate that. He finds it contrary to law; contrary to your label law, if you like, or to your compounds and mixtures' laws—well, contrary to law. Or let it be injurious, if you will. What is the result? That he notifies me that suit has been begun against me. Well, I says: "Hello, St. Louis, some of those goods have been seized." He says: "Don't lose any sleep, I will protect you." Gentlemen, when it comes down to the fact that this man, the prosecutions and fines that go against the man that has sold you the goods, and you have not at that time got that guaranty in your hand, understand, that man that is going to protect you, he will, yes—as far as dollars and cents are concerned. But he says: "Don't lose any sleep; if you are convicted, I will take care of you."

But the odium is on me. I am convicted. My friend, who is really the guilty party, pays the fine, or he may not be guilty, he may not know, he may have bought the same way, he may not know the ruling or the construction of the Commissioner. All those things, especially if they are compounds and mixtures. There you are, but the odium is on me, and the arrest is there, and I tell you, gentlemen, I believe it is wrong.

But we do believe, when you say you can confiscate and publish any transaction against the law in any of its phases, that you have pretty near hit the right point; that you have eradicated the bad goods out of the market; and you stop the spread of any such articles against the laws of this country.

And we always have believed, and do now believe, that when any law is put in the hands of the Government, Uncle Sam, that it is well administered. It is administered without putting any machinery in operation to turn out criminals by the hundred and punish innocent men. If it would be right to say "knowingly"—but we were told by our attorneys that there is no use in saying anything about putting in such a word. But I say now, if the quantity is small, then the publication will do the work. Don't you believe—and I think you have had experience—that all of our citizens are very apt to regard the laws of the Federal Government? They are afraid of falling into the hands of our Government officers. With the State laws they are not so apt to regard them. They may fight them; but when you come to the United States Government they do not fight; they can not do much about it. When it comes to technical points, I mean.

Now, gentlemen, there we stand. But I want you to be serious, I want you to investigate this, and I want you to go further. I want you to investigate the operations of the State laws and see how they compare with what I have told you. I do not want you to take for granted everything I say, but see for yourselves.

But I want to say, if you will allow me a reference, I think this is a question of such great importance, of such wide reach, that I believe it would be the very thing to do, if this committee would see fit, to appoint a committee to go to the different States, to what points you might select, go there and call and summon your best citizens, summon your rank and file, the retail grocer, summon your wholesale grocer, and let them give evidence as to the working of the State laws. Have your consumer come to you and have him say what the State laws have done. And then let that committee bring in a report as to what the laws that reach the public at large mean and what their experience is. Then you get the actual experience. Theory is a very nice thing, and I do not charge you gentlemen with theories. Excuse me for the reference, but I want to say that you can put in what the law is on the subject, and it looks all right. But when you have the opportunity, and Uncle Sam does all things well, why not go to the bottom and start right? Do things well. I want to say, gentlemen, if you undertook to do such a thing I would not have a minute's unrest of the bill you recommend. It would be 12348.

Gentlemen, I want to say to you we held lately our convention at Milwaukee, the National Association of Retail Grocers, of which I have the honor to be the honorary president. For five years I was president, and I am the chairman of the food committee. We had 29 States represented. That committee framed that bill, particularly sec-

tions 3 and 4, as proposed, and with regards to the fines and prosecutions. That was up for four hours in the committee, representing the State presidents of those different associations. We invited people to come to our convention from other States to hear what we were doing on this bill. In fact, the assistant food commissioners of one of the States, listening, questioning, and taking section by section, and they all said, "We believe you are right to build up from the foundation—that is the only law—a pure-food law against injury to the health of the whole people."

Mr. COOMBS. I would like to ask you a question. Who first suggested the idea—from what source did the idea of a pure-food law come?

Mr. SCHERER. Who first suggested it?

Mr. COOMBS. Yes; who first instigated it.

Mr. SCHERER. You mean this bill I speak about now?

Mr. COOMBS. I mean with reference to all of these bills. From what source did the first one come?

Mr. SCHERER. The first one?

Mr. COOMBS. Yes; the inception of the idea.

Mr. SCHERER. I am not able to answer that.

Mr. COOMBS. It was not from your body at all, was it?

Mr. SCHERER. I don't believe it was. But as soon as we got organized, in 1893, I stated to this committee, the first year it was organized we came here; in fact we never moved—

Mr. COOMBS. Was it not for the reason that you wanted to counteract the influences that were behind the Hepburn bill that you organized and proposed a law of your own?

Mr. SCHERER. No, sir; I want to disabuse your mind as far as I am concerned—

Mr. COOMBS. I want to understand this; I am asking you in good faith—

Mr. SCHERER. And I am answering you in good faith.

Mr. COOMBS. Is it not a fact that if no other law had been proposed here your association would not as an original proposition have come here and proposed this law? Would you not have been satisfied without any law at all?

Mr. SCHERER. Yes; because we were one of the principal originators of the Mann bill. We never came here, this association, to indorse any kind of a bill; but, as I stated yesterday, our experience with the food laws of the different States, our experience at the conference, at our university, with the professors there, with the different interests there, has revolutionized our idea with regard to certain food bills in the States, and also as to the needs of the food bills pending here—that is, in the past Congresses. At that time there was none pending.

Mr. RICHARDSON. Is it not a fact that you were getting along very well before there was any bill introduced at all?

Mr. SCHERER. Yes, sir.

Mr. RICHARDSON. Is it not true that your patronage depends a great deal upon the question of how acceptable your commodities are to your patrons, and if it is an inferior article they will soon drop it?

Mr. SCHERER. Too quick.

Mr. RICHARDSON. And the community will protect itself?

Mr. SCHERER. Yes, sir.

Mr. RICHARDSON (continuing). Will it not to a great extent? The

matter that you complain of mostly is, you are willing to see those articles which enter into articles which are injurious, you want those eradicated, just as much as anybody else.

Mr. SCHERER. Yes, sir.

Mr. RICHARDSON. But you do not want anything done that hampers fair trade, in the way, for instance, of having to label everything?

Mr. SCHERER. Yes, sir; that is right. You asked about the origin of this Mann bill?

Mr. COOMBS. No; I have found out what I wanted to know.

Mr. SCHERER. I was willing to give it to you.

Mr. COOMBS. I simply wanted to know if your association was not inspired in what you are doing here by a desire to oppose pending legislation, legislation which was pending before you came.

Mr. SCHERER. I will say in all frankness, no, sir.

Mr. COOMBS. I asked you that in good faith.

Mr. SCHERER. I am willing to tell all about it. I want to say further of the bill, in its features, that we recommended it for its passage and indorsement before the convention. It was taken up and discussed section by section, and you can go to our records and you will see that it was almost unanimously indorsed.

The CHAIRMAN. What bill?

Mr. SCHERER. It was almost unanimously indorsed by that convention, bill 9352. We have had a gentleman, who is a member of the legislature of Massachusetts, making the motion that I come here and represent the retail grocers of the United States—in other words, the National Association of Retail Grocers, which compose, as I have said, twenty-nine State and semi-State associations at that time. We are all the time organizing more. They indorsed this; I was delegated. Mr. Charles Linney, ex-senator of the State of New York and a grocer of Buffalo, is my assistant, and in the case of my absence here he would appear before your committee. I was instructed by the executive committee, if any administrative or any minor features (which we considered minor features because we believed that the Government would establish a food commissioner who would be a type of the highest citizen, and that that administration would be responsible; we believed that if it went anywhere else we did not have much objection), any changes of that kind, I was authorized to indorse such changes, with the principal feature that we were instructed in retained, and I am here now for that purpose.

I want to say here is a resolution on our national stationery regarding those bills that I have named that have been by our secretary, Charles Fifer, of St. Louis, and our president, Joseph E. Williams, of South Bend, Ind., sent to every one of you gentlemen and every member of Congress and United States Senator, to every one, showing our stand. Since that time a number of State associations that have had conventions have indorsed this bill unanimously. Also local associations—

The CHAIRMAN. Let me understand you. You say "indorsed this bill?"

Mr. SCHERER. The Mann bill.

The CHAIRMAN. You mean by that bill 9352?

Mr. SCHERER. Yes, sir. There was no other bill at that time on our part that we had to do with.

The CHAIRMAN. That is the bill you speak for?

Mr. SCHERER. That is the bill I speak for in regard to sections 3

and 4, and now the administration feature, I speak for 12348, and am authorized by my people to indorse in any such conference we may have to amend to suit our interests.

The CHAIRMAN. To suit the interest of the retail grocers?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. You are here now advocating, as you understand it, the interests of the retail grocers with reference to legislation?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. Now, in your present recommendation, you take out the important administrative features of the bill that your societies heretofore have indorsed?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. Then, I understand that you, representing the retail grocers, want the minimum of legislation, the least possible legislation?

Mr. SCHERER. We want the most forcible legislation as to impure foods, but no further.

The CHAIRMAN. And in doing that you advocate legislation that contains no prohibition, and that contains no penalty?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. Now, that is your idea of the legislation that benefits your trade?

Mr. SCHERER. That benefits the greater number of people.

The CHAIRMAN. You have been speaking for your trade?

Mr. SCHERER. For our trade—yes, sir; thank you.

The CHAIRMAN. And you are authorized to speak for your trade?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. You are not authorized to speak for your customers, the persons who may be harmed by deleterious foods; you do not claim to speak for them?

Mr. SCHERER. No, sir. When I said the greatest number I meant retailers.

The CHAIRMAN. Your societies have indorsed heretofore House bill No. 3109?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. You regard that now as entirely too stringent?

Mr. SCHERER. Yes, sir; I do and our people do.

The CHAIRMAN. You have heard of no objection, however, with reference to that bill and the stringent features of it, from any of your customers?

Mr. SCHERER. In fact, I don't know; I never heard our customers speak much about food legislation except in a general way, saying we ought to have protection.

The CHAIRMAN. They felt that there was necessity for protection?

Mr. SCHERER. Never anything about the quality of food except injurious.

The CHAIRMAN. You do not understand that that bill, 3109, attempted to affect any food except injurious food or to prohibit the sale of any food except injurious food, do you?

Mr. SCHERER. I would answer that in this way—

The CHAIRMAN. That is the purpose of the bill, is it not, to prevent the sale of deleterious food?

Mr. SCHERER. I have not that conviction now. I used to think that, but I don't now.

The CHAIRMAN. What conviction did you have at the time you advocated this?

Mr. SCHERER. The convictions were, Mr. Chairman, on the same line as I have said, that we got entirely different ideas of the food laws when we saw their operations and rulings on them.

The CHAIRMAN. Then, your hostility to legislation is because of what you regard as faulty legislation on the part of the States?

Mr. SCHERER. No; I regard it as wrong legislation in the feature beyond deleterious foods.

The CHAIRMAN. Beyond deleterious foods?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. Do you find any food affected by House bill 3109 other than deleterious foods?

Mr. SCHERER. I would not say that the foods do, but I say that the relation of the different sections in there seriously affect the interests of the food dealers.

The CHAIRMAN. Of the food dealers?

Mr. SCHERER. Themselves, and have no particular helpful protection to the public.

The CHAIRMAN. Well, it is your opinion, is it not, that there should be legislation that would be preventive of the sale of deleterious foods?

Mr. SCHERER. Certainly, emphatically; we are all for that. I have not heard a dissenting voice among our people.

The CHAIRMAN. Do you not believe, then, in pursuance of that legislation, that there should be a prohibition upon men preventing them from selling deleterious foods?

Mr. SCHERER. From selling deleterious foods?

The CHAIRMAN. Yes.

Mr. SCHERER. Certainly; that is the object.

The CHAIRMAN. Then, do you not believe that there should be some method to ascertain whether or not they do sell deleterious foods?

Mr. SCHERER. If you will allow me to answer—

The CHAIRMAN. Certainly.

Mr. SCHERER. I think that is operated in this way: Under a commission administering a law for the protection of foods deleterious to health—that is their object; that is their scope.

The CHAIRMAN. Then there must be some human agency or other to make those investigations?

Mr. SCHERER. Certainly.

The CHAIRMAN. They must have the power to investigate?

Mr. SCHERER. Sure.

The CHAIRMAN. After they have discovered that there are deleterious foods, they must have the power to stop that sale?

Mr. SCHERER. Yes, sir.

The CHAIRMAN. And they can not do that, can they, except they can be instrumental in the punishment of those who persist in selling that kind of food?

Mr. SCHERER. I do not look on it in that light. If goods are destroyed and published as being deleterious, it stops it at once; and if the State or national commissioner will confiscate my goods or anyone's goods that prove deleterious to health, then the man who is selling them is soon out of the market; and I want to say to you, gentlemen, in all due candor, that every retail merchant in the whole country will be

fearful of getting goods from any source where there has been a prosecution for deleterious goods. He will be afraid to touch anything of that kind.

The CHAIRMAN. Which will result in giving a black eye to that particular brand of goods—

Mr. SCHERER. That particular manufacturer, if you please.

The CHAIRMAN. But will it in any way prevent the inventive and ingenious gentleman who wants to sell a cheap article, without regard to whether it is deleterious or not, from changing his brand and trying anew with something else to impose upon the public, without you have some way of punishing him or restraining him from that conduct?

Mr. SCHERER. I would believe I would repeat what I have said in regard to that. If it was possible that your honorable body could conceive an idea about inserting "a guilty party," I don't care what the fines and prosecutions would do, but we could never separate that, and I still have the candid belief, Mr. Chairman, that we ought not to make nine innocent people suffer for one guilty one.

The CHAIRMAN. Let me get back again. If the retailer requires the guaranty, he is entirely exempt from the penalties!

Mr. SCHERER. If he receives that guaranty at a specific place, I have answered that; but if he happened to overlook that he is in for it.

The CHAIRMAN. It is simply, then, to conserve his convenience that you object to that feature in this bill?

Mr. SCHERER. I beg your pardon; I want to answer that in an indirect way.

The CHAIRMAN. Can you not answer it in a direct way?

Mr. SCHERER. I want to say something directly to it. Before we have come here—

The CHAIRMAN. Of course you will understand that I am not advocating one bill or another; I am simply trying to get your ideas on this matter.

Mr. SCHERER. You will allow me to say that I have the highest regard for all our national officers, and there is not a question in mind of any disposition on their part to be arbitrary.

I understand your question is for the purpose of getting the true situation, and I appreciate that. But I want to say that I have written to England, and I can read the letter I have received from the secretary in regard to the protection clause. We were very fearful as to how far such a clause would reach and how effective it would be, and whether it was not in a sense a special legislation or defeat.

Mr. RICHARDSON. I think it would be appropriate to read it.

Mr. SCHERER. If you wish you can read it yourself.

The CHAIRMAN. I wish to say that the bill that I have been referring to and that bears my name I have nothing to do with the authorship of; it is the bill of the pure-food convention, and was introduced by me at the request of the secretary; but there are some features of it that have been approved.

Mr. SCHERER. Do you desire that letter?

The CHAIRMAN. You can hand it to the stenographer, if you please.

Mr. SCHERER. It is a private letter, but it deals with that feature.

Mr. RICHARDSON. It gives information on that subject?

Mr. SCHERER. Yes, sir.

Mr. MANN. You need not take the time to read it.

Mr. SCHERER. I want to see whether I have got the right one here;

yes, sir, this is it; it deals with that feature, and we were fearful to come here and advocate anything. We are as serious as we can be to have a good law, a just law, an equitable law, and I do candidly believe you are going to help us to get an equitable law, Mr. Chairman and gentlemen, and I hope you will report favorably on House bill 12348.

INTERNATIONAL GROCERS' BUREAU,
London, England, December 6, 1901.

GEORGE A. SCHERER, Esq.,
Retail Grocers' Association, Peoria, Ill.

DEAR MR. SCHERER: Many thanks for your kindness in sending me on your circular on the national pure-food law. I notice, however, that in the circular you suggest a proviso similar to our "section 25 of the food and drugs act, 1899." I should think that must be a misprint, and that you must refer to section 25 of the sale of food and drugs act, 1875, which is the section dealing with the warranty. I send herewith a copy of a little book which Mr. Beck and I prepared on the whole question of food adulteration, and we have issued it pretty extensively. On page 38 you will find that section. We tried to get included in the 1899 act a provision that an ordinary invoice should be a warranty, i. e., that when a merchant sends to a storekeeper an article with an invoice, and puts it down as, say, butter, that shall be the merchant's warranty to the storekeeper that it is butter, without any additional words as a guaranty.

When the storekeeper in England sells to his customer, unless he puts a label upon the article stating that it is mixed, or something of that sort, he gives what is called an implied guaranty of genuineness, and we ask that the merchant shall do the same. The written guaranty of purity which you mention is a very difficult thing to get and a difficult thing to deal with, because in England we find that the courts are not at all clear what they mean by a written guaranty of purity. A thing can be pure and yet not genuine; there may be a written statement generally that "all goods sold by us are genuine;" that is not enough for our courts; they require on every invoice a specific statement that the goods in this invoice are genuine, and so you see that the law is full of pitfalls in that respect, and the only way out of those pitfalls is to make the invoice the warranty, or, at any rate, that is what we think, and that is what we are working for. We have got so far that we now get many of the more important merchants to put a definite statement on every invoice, and we hope to make the others follow suit some day.

If you will run through this little book, you will be in a better position to understand the English laws than I think you otherwise would do.

Yours, faithfully,

ARTHUR J. GILES.

STATEMENT OF MR. JAY D. MILLER, OF GENEVA, ILL.

The CHAIRMAN. What is your firm connection?

Mr. MILLER. Mr. Chairman, I appear as representative of Sprague, Warner & Co., of Chicago, Ill., who are engaged in a wholesale way in dealing in food products, and also as the representative of the Commercial Exchange of Chicago, which is an organization that has existed, as I understand, for about thirty-five or forty years, and is composed of the wholesale dealers in food products of the city of Chicago.

I apprehend that the committee adjourns at 12 o'clock, and it is about 3 minutes until 12 now, and therefore I will not enter at this moment into a discussion; but in order that you may properly fix in your minds my position, I have made a memorandum which I will read, and then I will ask the privilege of making an oral discussion to-morrow.

The CHAIRMAN. You will have the floor to-morrow morning.

Mr. MILLER. First, let me say that the Mann bill is the bill which I came here to advocate. That bill is now known as the "Corliss bill." The reason for the change was the absence of Mr. Mann in Chicago upon our arrival, and it appeared that a bill had been prepared which

eliminated the first and second sections of the Mann bill and substituted other sections therefor which was introduced by Mr. Corliss. The change is this: The Mann bill created a food department—an independent food department, if you please. The Corliss bill creates a food department in the Department of Agriculture.

Mr. CORLISS. A bureau you mean.

Mr. MILLER. A bureau of food in the Department of Agriculture.

With that understanding I will read a condensed statement, showing our position.

Mr. Miller read to the committee suggestions in support of House bill No. 12348, which appear in full in the continuation of his statement to-morrow, Friday, March 14.

At the conclusion of the reading of the paper the committee took a recess until to-morrow, Friday, March 14, 1902, at 10.30 o'clock a. m.

FRIDAY, March 14, 1902.

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

The CHAIRMAN. Mr. Miller, I believe, has the floor this morning.

STATEMENT OF MR. JAY D. MILLER—Continued.

Mr. MILLER. Mr. Chairman and gentlemen of the committee, I desire at this time to file the paper which I read yesterday, and I shall file that as the suggestions of George A. Scherrer, representing the National Grocers' Association; Graeme Stewart, representing W. M. Hoyt & Co. and the wholesale grocers' division of the Illinois Manufacturers' Association, as its vice-president, and also representing the Commercial Exchange of Chicago; Frank H. Madden and Charles E. M. Newton, representing Reid, Murdoch & Co. and the Chicago Commercial Exchange; John M. Glenn, representing the wholesale grocers' division of the Illinois Manufacturers' Association, as its secretary; and Jay D. Miller, representing Sprague, Warner & Co. and the Commercial Exchange of Chicago.

[In re House bill No. 12348, introduced by Mr. Corliss.]

This bill seeks to prevent transportation of deleterious food and drink between the States, and has no other purpose. Section 1 provides for the creation of a food bureau within the Department of Agriculture and the appointment by the President of a food commissioner.

Section 2 says that the food commissioner shall have charge of the enforcement of the act, and that he shall, with the approval of the Secretary of Agriculture, appoint a chief chemist. The food commissioner is authorized to employ such other chemists, inspectors, clerks, and laborers as may be deemed necessary. He is also authorized to make analyses of articles of food and drink and compounds intended to be used in the preparation of food and drink offered for sale in the District of Columbia or the Territories of the United States or found in any State other than that in which they shall have been manufactured or produced or imported from a foreign country or intended for export to a foreign country.

Section 3 provides that an article of food or drink or any article or compound intended to become an ingredient in a composition or preparation for food or drink, containing any substance or substances which are in the quantity used or intended to be used deleterious to health and has been transported from one State to another and remains in original packages or is being transported from one State to another for sale, or if it be sold or offered for sale in the District of Columbia or any of the

Territories, or if it be imported from a foreign country, shall be liable to be proceeded against in any district court of the United States within the district where the same is found, and seized for confiscation by a process of libel for condemnation.

And if such article is condemned as being deleterious to health in the quantity used or intended to be used, the same may be disposed of as the court may direct. The proceedings in such libel cases shall conform as nearly as may be to proceedings in admiralty, except that either party may demand trial by jury.

Section 4 provides that any person may submit to the food commissioner a formula for the manufacture of any preparation intended for food or drink with a sample prepared after such formula, and it shall be the duty of the commissioner to approve or reject the formula and enter upon his record such formula, together with the approval or rejection thereof. When a formula has been approved by the commissioner, this act shall not apply to any article prepared in accordance with said formula so approved by the commissioner.

This bill does not apply to any article intended to be used as a medicine only.

The sole purpose of this bill is to prevent the transportation between the States of articles of food and drink which are or may be deleterious to health without in any manner interfering with the private business of persons, firms, or corporations, who are or may be engaged in dealing in and transporting products which are admitted to be healthful.

Other bills now pending before this committee have two objects.

First. To protect the health.

Second. To prevent an alleged commercial fraud.

This bill is framed upon the theory that when an article of food is wholesome it is, as an article of commerce, in the same class with all other merchandise, and any discrimination against it is purely and simply unwarranted class legislation.

To illustrate: Cigars are frequently sold as Habana, although the tobacco from which they are made was grown in Virginia, Kentucky, or Missouri. Furniture made from basswood raised in Wisconsin is polished and successfully sold throughout the United States as mahogany. Clothing containing a high per cent of cotton and shoddy is often sold as all wool. Jewelry manufactured from common materials is placed in a bath to give it the appearance of gold and is sold under the gold-standard brand; but Missouri cigars do not generally bring a Habana price, although sold under a Spanish brand. Furniture made from Wisconsin basswood does not generally bring a mahogany price, although sold under a mahogany brand. Cotton clothing does not usually bring a wool price, although sold as woolen. Jewelry washed to appear like gold and sold under a gold brand does not bring a gold price. Neither does syrup composed of glucose and maple or cane syrup commonly bring a maple syrup price, although sold under a maple-syrup brand.

Chocolate containing a large per cent of starch, although sold under a chocolate brand, does not generally command the price of pure chocolate. Cotton-seed oil does not command the price of olive oil, although sold under the olive brand. The reason why the higher prices can not be obtained is because the price of all these and similar commodities is regulated by competition, and when the cost of production is cheapened the competitive principle operates to cheapen the product to the consumer. The result as to healthful compounds in food products is that the excessive profits which the advocates of other bills so strenuously denounce as a commercial fraud and injurious to the pocket nerve are not as a rule obtained; certainly not to a greater extent than in other lines of merchandise.

If Congress proposes to compel true labeling of articles of food, which are admitted to be pure and wholesome, it can not consistently refuse to compel such labeling of all other articles which are proper subjects of commerce, but such legislation should be independent of this act. If Congress proposes to compel the dealer in articles of food to show where they are packed or produced, it thereby requires him to expose to his competitors the source of supply of his stock and thus reveal the information upon which he relies to insure business success.

This bill provides as a penalty the confiscation of all deleterious products. It appears to us that this penalty is adequate and the only one which can be universally applied with justice. If merchandise shall be condemned and disposed of by the United States court, the undesirable notoriety gained through the press will of itself be sufficient to ruin the business reputation of the manufacturer and destroy the value of his brand of merchandise. In addition to this his merchandise will be a total loss. And one who has violated the law and received this punishment will not be liable to repeat the experiment.

Mr. MILLER (continuing). Now, gentlemen, I shall endeavor to be brief and not unnecessarily weary the committee.

The CHAIRMAN. Let me ask you if you have laid out in your minds any particular line of discussion that you prefer to follow: if not, I was going to make the suggestion that I thought might be agreeable, that you would explain each one of the two bills that you seem to favor, explain the provisions one at a time, and the distinction between the two bills, and why that change was made or is desirable, if that is just as agreeable to you. Of course I do not want to interfere with your line of argument.

Mr. MILLER. Let me see if I clearly understand you, Mr. Chairman, when you speak of the two bills—

The CHAIRMAN. The two bills that I thought the gentlemen here largely favor—the Mann bill, as we call it, and the Corliss bill. And then there are some differences between the two measures.

Mr. MILLER. I will be pleased to adopt the Chair's suggestion and explain the reason for the changes.

The CHAIRMAN. If you will, take one or the other of the bills first—

Mr. MILLER. I think possibly I can do it in a word or two to the full satisfaction of the committee.

The original bill was known as the Mann bill—

The CHAIRMAN. 9352?

Mr. MILLER. I think that was the bill. That bill provided for creating a food department independent of any other department of the Government, in the same way that the different States have organized food departments. It provided for a food commissioner and assistants, a chief chemist and assistants, inspectors, and so forth. It appears that later certain parties suggested that it was unwise to create such a department on account of the unnecessary multiplicity of departments. In order to avoid that it seems that they have eliminated that feature of the bill. Instead of sections 1 and 2 of the Mann bill, which created a new food department, there were substituted sections 1 and 2 of the Corliss bill, now under consideration as No. 12349, which provides for creating a food bureau under the Department of Agriculture.

Now, I understand there has been no other change made in the bill except one or two very minor matters. For instance, the original bill designated the officer as a dairy and food commissioner, and throughout the bill, in referring to the officer, he was designated in the different sections as dairy and food commissioner. In this bill he appears as commissioner, and the words "dairy and food" are stricken out.

The CHAIRMAN. If you please, there is a marked difference in the salary.

Mr. MILLER. Yes, sir.

The CHAIRMAN. Will you give us your views as to that matter, too, because that might indicate—the salary that you would be willing to pay—the character of talent that you want and the importance of the position.

Mr. MILLER. Mr. Chairman, I understand the salary designated for the commissioner in the Mann bill was larger than in the present bill. I think in another section, where it was stated that the commissioner should keep a public record, that the word "public" has been stricken out and it is simply a "record" instead of a "public record." Merely such changes as that. But as to the meat of the bill—that is, as to the real bill—it is substantially the same, and the changes are

merely minor. I am not aware of any other changes in the bill. Now, have I made myself clear to the committee on that point?

Mr. MANN. Will you inform me whether, after sections 1 and 2, the Mann bill and the Corliss bill are the same?

Mr. MILLER. I can not hear you, sir.

Mr. MANN. Are sections 3 and 4 of the Mann bill the same?

Mr. MILLER. They are exactly the same, with the exception that the word "public" is stricken—let me get that bill. Section 4 is the section that is prepared with the view of enabling business men to know what the Department wants. It is the section that provides that anyone may submit to the commissioner a formula, together with a sample of the product prepared in accordance with the formula submitted. It provides that the commissioner shall proceed to analyze or investigate and report upon that formula; that he must either reject the formula or approve it. I had better read the section.

SEC. 4. That any person or persons, company or corporation, engaged or interested in the manufacture of food products may at any time submit to the food commissioner a formula for the manufacture of any preparation intended for food or drink, with a sample prepared after such formula. It shall be the duty of said food commissioner to approve or reject said formula and enter upon the record of his office, hereafter provided for, such formula, together with the approval or rejection thereof, and if rejected, the specific reasons therefor. He shall also enter upon said record the name and address of the person or persons, company or corporation, submitting said formula. When a formula has been approved by the food commissioner, this act shall not apply to any article transported or introduced, or intended to be introduced, into any State or Territory or the District of Columbia, from any other State or Territory or the District of Columbia, or from any foreign country, by any person or persons, company or corporation, prepared in accordance with said formula so approved by the food commissioner.

Then in the next section this change was made: "That the food commissioner shall keep a book or books." I think the Mann bill said, "Which shall be a public record." Those words are stricken out. I did not strike them out, but I see that they have been stricken out by the parties who submitted the Corliss bill in place of the Mann bill.

The CHAIRMAN. Are you familiar with the purpose that they thought would be conserved by that change?

Mr. MILLER. I am not aware that I am. I will say, however, that I have discussed the matter with the persons who I think were concerned in making the change, and I think they felt that it was largely surplusage. That is my understanding of it.

Mr. MANN. If that is a public record, Mr. Miller, would it not enable any rival food manufacturer of a food product to ascertain exactly the composition of it?

Mr. MILLER. Yes, sir.

Mr. MANN. And the formula for it?

Mr. MILLER. Yes, sir; if it is a public record it will, and I think it should be a public record. That is my personal view. The reason is this: I believe, for instance, that the provisions of section 4 should be incorporated into any food law that may be adopted, because it enables business men to know upon what they can rely. Unless you have had experience you have no conception of the annoyance that grows from rulings that are changed frequently by State food commissioners. The purpose of the section is to know, first, upon what we can rely. The section does not compel any man to submit his formula.

If he does it is a voluntary matter, and I am aware of no reason why

if he wants a favor from the Government, if he wants to have the Government pronounce or approve a formula so that he may safely proceed under it, the record should not be public. It is true that anybody may have access to it, and I think everybody should have access to it. Private records in public business, in my judgment, should be considered against public policy. If it is a private record, it may enable the person who submits the formula to lead the public to believe that his pet is bolstered up by the Government, which I think is unwise.

If it is a public record anybody can use it, and a certificate is of no importance, creates no monopoly. What we are after, and what we want, is a law that will make everything that is deleterious contraband, and also to know upon what we can safely rely in doing business. We are not here seeking favors from the Government; we are not here seeking a thing that will give us the benefit of a private formula, and have that certified by the Government as a thing which may as a certificate give or tend to give us a private monopoly.

Mr. MANN. You spoke of the interests you represent. Does your firm or company manufacture as well as sell by the wholesale?

Mr. MILLER. Yes, sir; very largely.

Mr. MANN. They are both manufacturers and jobbers?

Mr. MILLER. Yes.

Mr. MANN. Of course I understand that the firm is one of the largest in the country in that line of business, but I did not know how far they went as manufacturers.

Mr. MILLER. Now, have I made myself clear to the committee on the change from the Mann to the Corliss bill?

Mr. MANN. I take it that what you are interested in is not the administrative features of the bill—that is, the changes that have been made—but the substance of the bill?

Mr. MILLER. That is right. We do not care who administers this law; we do not care under what department of the Government it is; but what we care for is a law under which we can do business without unnecessary annoyance.

Mr. Chairman, I may digress just for a moment, but you will pardon me for doing it. I think that the members of Congress generally have not investigated the food question. I have great confidence in their seeking to arrive at the right position on this matter, but I believe, from talking with a few of them, that they are wholly unfamiliar with the subject.

I do not refer when I say that to this committee, for I know the members of this committee have to some extent investigated the subject; but I refer to the members of Congress who have not had occasion to investigate along this line. The average member of Congress has received his information from public addresses, from literature that has been scattered broadcast—not issued by people who are engaged in business, but by those who, though unfamiliar with the business, honestly seek to get pure food. While they are seeking to prohibit dealing in deleterious goods, they are seeking to do it in a manner which places upon legitimate trade a burden which is unwarranted and unnecessary. Several of the States have enacted food laws. The interests that I represent, if they had been afraid of a pure-food law, would doubtless have gone before the committees of the State legislatures and argued the question. But they do not care what kind of a food law we have, so that it is workable, and they have

never gone before a committee of any State legislature in this country. They have relied upon the good judgment of the members of the legislatures.

But it appears that the people who have, through our State legislatures, secured these laws were not familiar, as a rule, with the actual business conditions. Therefore we have a lot of State food laws which are wholly crude and impracticable, which are giving and will continue to give general dissatisfaction.

I was advised yesterday that the retail grocers of Chicago have held a mass meeting protesting against certain features in our Illinois food law. It is simply because these laws have been framed without a proper knowledge of the business. If we were seeking——

Mr. RICHARDSON. You mean to say by that that there is too much law on this subject?

Mr. MILLER. It is not the right kind of law. Yes, sir; that is it.

Mr. RICHARDSON. It goes into the minutiae too much?

Mr. MILLER. Yes, sir.

Mr. RICHARDSON. The best governed people are those that are least governed?

Mr. MILLER. Yes; that is a pretty safe rule. The trouble is this: The disposition in the States is, and it is a growing disposition, for government to take charge of everything, from an ingrowing toenail to a declaration of war. Now, we have never sought to defeat any pure-food legislation, and we do not appear here for the purpose of defeating any pure-food legislation, and I do not care what kind of an act you pass so that you pass one which will secure pure food and let it end there without placing the rights of innocent persons in jeopardy.

In coming before Congress in a matter of this kind we are under the suspicion, as I am well aware, that we have a private interest to support, and our words may not be received with the same credence that the words of disinterested parties may receive; but I want to say that there is no suggestion which they can make to secure pure food that is practicable on which we are not with them. But that is where we draw the line.

Mr. RICHARDSON. Is it not a fact that the definition of what is called pure food is continually changing? One man will pronounce something pure and another will not. Is not that so?

Mr. MILLER. Yes, sir.

Mr. ADAMSON. Do you think there are many people who appear here who are not prompted by some private interest?

Mr. MILLER. That may be, Congressman, but I have never appeared before Congress to argue any question on behalf of any interest.

Mr. ADAMSON. I think you are with the majority if you are actuated by some special interest.

Mr. MILLER. I want to refer now to the question of the police power. I advise the members of this committee carefully to investigate the question of police powers of this Government. In my judgment the bills that are pending here to regulate commerce in pure food when it is admitted to be healthful are wholly unconstitutional. We have the power to prevent the transportation of deleterious articles, because the Supreme Court says that they are not properly subjects of commerce; but when an article is admitted to be wholesome this Government has no police power over it. That has never been delegated by the States, in my judgment, to the National Government.

Mr. MANN. I would suggest that the jurisdiction of Congress on this subject does not depend upon the police power at all. The jurisdiction as claimed relates simply to the question of regulating commerce between the States.

Mr. COOMBS. Do you not think the Federal police power is exercised in the execution of the revenue laws of the Government?

Mr. MILLER. Yes, sir; but it can not be done directly, hence they do it indirectly. I would refer the committee to the case of *Leisy v. Hardy*, which went from Iowa to the Supreme Court—the Original Package Decision. I do not care, however, to discuss the decision, because my time is too limited.

Mr. RICHARDSON. I am disposed to believe that we ought not to have too much legislation on a subject of this kind. You are going to prevent under this bill the sale of obnoxious articles; do you think the mere labeling of them and condemnation by the Government will stop it without any punishment or prohibition? How do you explain that?

Mr. MILLER. Upon that question I say this: This bill prevents the transportation of deleterious articles. The penalty for it is the confiscation of the merchandise. When a carload of goods is taken charge of by United States inspectors the press at once announces it. I say that there is no penalty that you can apply that is more damaging to a business reputation than that announcement.

Mr. RICHARDSON. Let me tell you what my observation about that is. In my section of the country we have moonshiners, and they make illicit whisky. Those men are frequently caught by the Government officers. The fact of arresting them and punishing them does not stop them; they believe as long as corn is planted and grown they have a right to convert that into liquid, just as they have a right to use their potatoes and other products. Those moonshiners are frequently punished, but the mere fact of punishing them does not stop that business. Would it not operate the same in your case?

Mr. MILLER. I think not.

Mr. RICHARDSON. Why not? I want to prohibit the sale of deleterious foods.

Mr. ADAMSON. Do you not think that the best thing the Federal Government could do would be to confine its efforts to an investigation; that any bureau it might establish having to do with this question should operate in an advisory or educational capacity, making it purely instructory, and leave the more stringent applications and regulations, of those things to local authorities?

Mr. MILLER. I probably had better take the questions in order.

In answer to the question of Congressman Richardson I say this: That the persons to whom he refers are probably a lot of fellows in the mountains who have no reputation to protect.

Mr. ADAMSON. Their output is better than the regular article—

Mr. MANN. They have no business reputation.

Mr. RICHARDSON. No; you are mistaken about that. Some of them are good men, and they think it is an inalienable right that they have to convert their corn into liquid, and instead of carrying a wagonload of corn 20 miles to the railroad they will convert it into whisky, about 20 loads of corn to the barrel; and I am in sympathy with them.

Mr. MILLER. Yes; they have the defense that their article is pure. The revenue tax is the thing which induces the fraud. I would repeal it.

Mr. RICHARDSON. There is no doubt about that.

Mr. MILLER. Until then I think it is a good place for members of Congress to get their whisky.

Mr. MANN. On that line—

Mr. MILLER. I want to answer the Congressman's question. I feel that any concern with an established reputation the moment the press announces that their goods have been confiscated have been damaged to an extent that is irreparable. In addition to that, if you confiscate their merchandise, it is a pretty heavy fine. This thing is a fine—that is what it is. It is a penalty that is a very effective one. It is notice to the patrons of the wholesaler that they should not buy their goods of him. It makes them careful. It will at once destroy his business reputation.

Mr. RICHARDSON. Right there, in addition. If it accomplishes just what you say it does in that respect—that is, the condemnation and labeling, and so forth, and the confiscation and the sale—why not add a provision to it that that man whose goods are confiscated should be amenable to the law by a penal punishment? Would not that make it more effectual?

Mr. MILLER. Let me answer that question, with the consent of the other Congressman, in advance of answering his question.

I suggested to the committee yesterday that I did not believe a penalty of imprisonment could be justly applied in a food law, and I will take this opportunity to explain why, and I will now refer to the Hepburn bill. The Hepburn bill provides for an imprisonment of innocent men. It provides that a man may be imprisoned even though he has no knowledge that he has committed a crime. When the retailer or the wholesaler receives merchandise from the manufacturer he usually does not know what it contains. He does not know the composition. He does not know that there is anything deleterious. The United States inspector comes along, under the Hepburn bill, and he would be subject to imprisonment unless he has that thing they call a guaranty. You have sought to cover that point in that way, but I do not believe it covers it.

Mr. MILLER. Suppose that the wholesale dealer sells to the retail dealer a lot of pure maple sugar. Maple sugar comes in cakes. It may have a paper wrapped around it, showing the name. Later there may some trouble come up between the wholesaler and the retailer, and enmity arise. It is a very easy matter for the retailer to get even with the wholesaler by wrongfully substituting a cake of adulterated maple sugar and wrapping it in the same package and claim he holds a guaranty from the wholesale dealer on that. You then arrest the wholesaler, and the wholesaler will be helpless. He can not prove the substitution, and can make no defense, even though he may be innocent. This is a fraud which may be maliciously committed by the retailer upon the wholesaler.

We had in Chicago a case within the last three months in which a man was arrested for the sale of illegal vinegar. He came into court, but it developed that he had substituted other vinegar from what he had originally bought. He finally pleaded guilty and paid his fine. That is the position in which the Hepburn bill would place the manufacturer or the wholesaler, and the retailer had denied the substitution.

The CHAIRMAN. With regard to one point suggested, what would be the difficulty of having a guaranty on the invoice, having it printed, and when the invoice was prepared that the guaranty be signed?

Mr. MILLER. The difficulty is to identify the goods.

The CHAIRMAN. I see that.

Mr. MILLER. That is the difficulty.

Mr. ADAMSON. I do not think the illustration you put, however, justifies Federal interference at all. I think, under the circumstances, as given in your illustration, that that man would be dealt with by the local courts and would be sent to jail.

Mr. MILLER. You are right about that.

Mr. ADAMSON. Whoever is caught must catch the fellow who caught him.

Mr. MANN. But that would eliminate the retailer. It would not put it on him; it would put it on the wholesaler.

Mr. ADAMSON. Where would you put it? You would have to have facts to establish your case in the Federal courts, just as you have to have facts in the local courts now.

Mr. MILLER. I do not know that I catch the point, but what I mean is this: It opens a wide door for innocent men to be punished. If you want to adopt a clause that will imprison a man, I say that the only wise thing that you can do is to do as we have done in other criminal statutes. Why should this be an exception? The Hepburn bill provides that a man may be imprisoned, although he has no knowledge.

Mr. ADAMSON. I do not think that part of it would hold water, if that is in it.

Mr. MILLER. Why do you not take this section two? I will read that part of it:

"Any person who shall ship or deliver for shipment," and so on, and who shall sell and offer for sale. Why do you not say if he shall knowingly and willfully offer for sale and deliver for shipment; if he shall knowingly sell and offer for sale?

Mr. ADAMSON. The fundamental principle is that an intent is necessary for a criminal act.

Mr. MILLER. Yes, sir; but under the decisions of the Ohio, Pennsylvania, Michigan, and Illinois courts, construing a similar statute, one who has no knowledge may be convicted.

Now, gentlemen, I want to state to you that if this Hepburn bill should become a law, in my judgment there is not an employee of a transportation company in this country who would not be liable under this act to arrest and imprisonment if he assisted in the transportation of deleterious articles, although he would be perfectly innocent. This is a question, gentlemen, of transportation between the States.

Mr. COOMBS. You mean a brakeman in a train would be responsible?

Mr. MILLER. If he assists in putting deleterious articles into another State; certainly.

Mr. RICHARDSON. He is accessory after the fact.

Mr. MANN. That probably would not be a practical question.

Mr. COOMBS. It is not a practical objection.

Mr. MANN. It might be, theoretically.

Mr. MILLER. If your theory is correct it will work; a theory is nothing but a plan; and if it is correct it will work.

Mr. MANN. Let me ask you further about that question of guarantee. Would it not be practicable for a grocer to give a guarantee, not with each invoice or with each shipment, but a guarantee as to the purity of a certain kind of goods? For instance, you sell a certain

brand of canned corn. You give to the grocer to whom you offer to sell that a written guarantee of the purity of that brand of corn—

Mr. MILLER. I understand.

Mr. MANN (continuing). Which will apply not only to the present but to the future?

Mr. MILLER. I understand; but, Mr. Mann, let me suggest this: I have two cases now pending in the Illinois courts for the arrest of men who have been selling chocolate, one of whom resides in Chicago and one in a suburb of Chicago. That chocolate comes in cakes wrapped in papers, and there is a brand on the paper outside. I have been before our food commissioner, and he says that chocolate is perfectly wholesome. There is nothing deleterious in it (he has analyzed it), but it contains starch. Therefore, under the Illinois law, he has arrested these men. Now, suppose one of those retail dealers had a guarantee from the wholesaler, and the wholesaler had a guarantee from the manufacturer, how can you ever show that that chocolate is the chocolate that was manufactured by this man or sold by the jobber? It may have been changed.

Here are a half dozen brands of chocolate, the product of different manufacturers. A wrapper is loose and it comes off and you get the wrapper around the wrong stick. These accidents may happen innocently. It is a question then of being able to identify the goods. It renders the guarantee, in my judgment, absolutely valueless. A wholesaler might thus easily be convicted under the Hepburn guaranty clause for selling chocolate which he never handled or owned.

Mr. ADAMSON. Those questions arise in every solitary criminal case; that question comes up, the question of *prima facia* evidence and proof and whether a man is perjuring himself.

Mr. MANN. You speak of chocolate as an instance. Is there or not a considerable portion of the chocolate in commercial use made abroad, or is it made in this country?

Mr. MILLER. It is made both in this country and abroad; yes, sir.

Mr. MANN. Is there a proportion of it that is sold, in common use, of foreign manufacture?

Mr. MILLER. Yes, sir; that is my understanding of it.

Mr. MANN. I do not know about it.

Mr. MILLER. If a manufacturer—

Mr. MANN. Of course this Hepburn bill would absolutely shut that out.

Mr. MILLER. Suppose you have a foreign manufacturer from whom the wholesaler has bought. He has, under the Hepburn bill, absolutely no defense in court. You take — mustard. With the consent of the committee I will withdraw the name. The food commissioner of one of the States has recently condemned it. He says it contains wheat starch.

Now, — mustard^{*} is manufactured in England, and it has been sold in the United States for a generation or two. Under this Hepburn guaranty law the dealer in it would have absolutely no protection and could make no defense whatever in the United States courts.

It places the liberty of the innocent manufacturer in constant jeopardy. The adulteration may be in the sugar or some other ingredient. How can he show that he holds a guaranty covering the same

* Mr. Miller mentioned a certain brand of mustard.

sugar, now a part of the product for the sale of which the retailer is arrested?

So I say you can not apply an imprisonment law, in my judgment, justly unless you will insert the words "knowingly and willfully" as they appear in the definition of all other crimes.

Mr. MANN. Now, will you permit another question?

Mr. MILLER. Certainly.

Mr. MANN. You are a practical man and know something in reference to these adulterations. Are most of the adulterations of food products made by the retail dealers or by the manufacturers?

Mr. MILLER. I should say possibly, if you want my opinion, that retail dealers and manufacturers both may adulterate. But I think the greater part of it is by manufacturers.

Mr. MANN. What I wanted to get at is this: It seems to me quite plain that the bill you are advocating would not affect to any extent an ordinary retail dealer who himself might adulterate the food products. And not only that, but it is not likely that there will be enough inspectors from this bureau or department going around the country to be able to examine every retail food dealer as to what he does himself; but the manufacturers are limited in number. You might without fine stop their adulterations through the bill you advocate if they are the ones that are guilty.

Mr. MILLER. In my judgment a law which will confiscate goods will be a complete remedy for everything that is deleterious.

Now, our opponents are anxious about the commercial feature. I think the Corliss bill will largely settle that question also.

Mr. MANN. Take, for instance, the case of preservatives in foods; they are put in foods by the men who manufacture the foods—the manufacturers.

Mr. MILLER. Yes, sir; but they are not, in my judgment, generally deleterious.

Mr. MANN. Would it be possible for the manufacturer to use that deleterious preservative if the food was subject to confiscation?

Mr. MILLER. No, sir; not successfully. It would be impossible for him to do business in deleterious goods, and if he sold deleterious goods at all it would completely injure his reputation and ruin his business as to goods which were not deleterious.

Now, gentlemen, I am to be followed by Mr. Madden. I had a programme mapped out, but on account of questions which have been asked I have really not got started in what I wished to say, but I do not want to encroach upon his time. We hope to be able to leave the city to-night. Mr. Madden is a practical manufacturer; I am not. I only have charge of the legal department. He is one of the largest manufacturers in the country. Does the committee sit on Saturday?

The CHAIRMAN. Yes, sir.

Mr. ADAMSON. I would be glad to hear what you have to say as to my suggestion about the General Government operating in an advisory or educational capacity. My idea is this, and I make this suggestion: There are differences and difficulties about the administrative features of all plans suggested. The Government—say the present Agricultural Department, for instance—has laboratories and apparatus and opportunities for analyses and investigations, and the Government can supplement those as much as necessary in that or any other Department. It has its army of officials out capable of collecting information

and disseminating information, and it might invite all people who wanted that certificate of good character to submit their goods to an analysis, and they then might be registered or a trade-mark given, or something of that sort. Now, would not that be sufficient and about as good a scheme as you could suggest for the general good?

Mr. MILLER. I would answer the Congressman by saying that in my judgment anything that will correctly educate the people is a desirable thing. I think that is an elegant suggestion; but I doubt the advisability of causing the Government to issue certificates. What is good for one person may not be for another. The palate and stomach are safer guides than certificates. But I do believe that it is desirable to have a law that will prevent the transportation of deleterious goods. I believe that a law of that kind should be enacted; but it should not go beyond that.

Mr. ADAMSON. Do you not think that under my suggestion it would soon be the case that a tradesman or manufacturer undertaking to ship goods without the Government approval of his formula and trade-mark would find no sale for his goods?

Mr. MILLER. That is true to a large extent. I think that would be the tendency very strongly; yes, sir; but of course we would have to be very careful, Mr. Congressman, about one thing. We should be very careful about the power of the commissioner and the blind and unwarranted credence that the masses have in anything officially stamped. It is surprising to see how men love power.

Mr. ADAMSON. Under my suggestion he would have no power but to give out information and to give certificates of approval of formulas and trade-marks.

Mr. MILLER. But suppose he would withhold from one man a certificate who has as good a formula as another man to whom he denies a certificate?

Mr. MANN. That suggestion would not reach those who really wanted to cheat the public with deleterious foods.

Mr. MILLER. No, sir. Therefore I feel we ought to have a law on the question of deleterious foods; but the suggestion of the Congressman as to the education of the people is a very desirable thing. But when it comes to certificates, I advise extreme caution. Let me give an example: One of the commissioners of one of the States—I feel it would be improper to mention names, although I will do so, provided any Congressman should desire it, but I do not want to make a public record of it—one of the commissioners of one of the States in an official report, which any of you can see, has said to the citizens of his State that if they want pure vinegar he would advise them to buy it within the State; and he says that a certain firm, mentioning the firm, that he has not had any vinegar from that firm that has been adulterated, or words to that effect. In a conversation with the successor of this food commissioner he told me that the firm which had received the blessing of his predecessor had at least made some mistakes in its efforts to comply with the law.

What I want to say is that it is very well to be extremely careful about giving power of that kind. Of course the law does not give him that power, he simply assumes it; but what I want to show is that the rules of commissioners are very powerful and very dangerous. You take all of the States of which I have any knowledge where there are food laws. The commissioner frames rules. There may be noth-

ing in the statute authorizing him to do so, but he will frame rules under which we must do business.' He does it arbitrarily. That rule until reversed has the effect of a law, although not warranted by or founded upon the law. He says, "You must comply with this rule." Well, if we do not? We have about 12,000 different items included that are sold in our trade. Here is the commissioner with his inspectors who has the power to go out and ruin us. We have to respect a rule whether it is right or wrong.

If we undertake to fight it we wrongfully get the undesirable reputation of fighting a pure-food law. You can see that we can not afford to do that. Take a business concern with a large capital invested and it can not assume the risk of opposing the arbitrary ruling of the food commissioner, even although it appears upon its face that it is wholly wrong and unwarranted. You have no conception, unless you have met the thing in actual experience, of the power—the arbitrary power—that these commissioners have, based upon ruling which they may arbitrarily and wrongfully make.

Take the State of Michigan. That law does not provide for any rules of the commissioner whatever, yet I have here the December, 1901, report of the commissioner. The law is on page 25. I will file this and make it a part of my remarks, and any of you who cares to do so may examine it.

Now, under the law which gives him no power whatever to make any rules, he says, on page 10 (I do not care to read and make a part of the record the names of parties):

"That sample of"—here he gives the name of the manufacturer—"Smith's prepared mustard"—then the name of the retail dealer and the name of the place where he lives (—), and he gives the analysis of the mustard, and below he makes this note:

Not properly labeled.

There is a man subject to arrest solely because he placed his name before the words "prepared mustard."

Turning to page 29 and the rule in reference to mustard. Here is the ruling:

The label proper must contain the words "Prepared mustard" and have no other designation than herein required.

When the manufacturer labeled the mustard he labeled it "Smith's prepared mustard." I will not give his proper name, but we will call him Smith. He put his name there, and added "prepared mustard." And now, under the laws of Michigan, he must either fight that ruling, arbitrarily made by the commissioner, and go through all the courts of Michigan, or rest with the reputation of being a violator of the pure-food law. To fight it will give him an undesirable reputation.

Mr. RICHARDSON. What does the law require him to put on it?

Mr. MILLER. The law says that it shall not be misbranded.

Mr. RICHARDSON. What did the commissioner say?

Mr. MILLER. The commissioner says that he may put "Prepared mustard" there, but no other designation before those words. He can not use his name before the words "Prepared mustard."

Mr. ADAMSON. I think that man ought to go to the Michigan legislature and have either the law or the commissioner amended.

Mr. MILLER. The trouble is that you must first educate the people in order to change the Michigan legislature. I could show, if I had

the time and could take up the different rulings of these food commissioners, that arbitrary rulings of this nature are numerous.

Mr. ADAMSON. Yet are they not about as good and reliable, as a general class, as the officers who would have to go through the States and execute the details of all these punitive measures that are suggested?

Mr. MILLER. I say yes. I have met a number of these food commissioners and have had conversations with them. I have never met one whom I do not believe honestly seeks to do what is right. They make errors, but they do it honestly. But they unconsciously love power; that is a human weakness.

Mr. RICHARDSON. Is not the complaint properly against the law rather than against the commissioner?

Mr. MILLER. Yes; what I want to show is this: That there should not be any law enacted whereby a commissioner can possibly make rules under which we are compelled to operate.

Now, I have it from Mr. Grosvenor, formerly food commissioner of Michigan, who appeared before this committee day before yesterday, and who was before the Senate Committee on Manufactures yesterday, that the way this thing was done was this, while it was not founded on a law: He says that the chemist will be directed by the commissioner to make an analysis, and that if he finds coloring matter, for instance, he must report it adulterated. The coloring matter may be harmless, but the commissioner makes that rule and it has the effect of law although not provided for by the law. If it is a harmful color he should say so, but he makes no distinction.

So, there should be no law framed unless the commissioner is prohibited absolutely from making a ruling by which dealers and manufacturers may wrongfully be harmed.

Now, gentlemen, the Corliss bill provides for the abolition of deleterious foods. We feel that when an article is admittedly wholesome—when all deleterious articles are removed—that the wholesome article should be upon the same plane as an article of commerce with all other articles of merchandise.

The CHAIRMAN. In your judgment is any legislation of this character necessary?

Mr. MILLER. In my judgment, Mr. Chairman, I say to you frankly no, because the States have this power; but if there is any possibility that assistance can be given to prevent trade in deleterious foods, then I am in favor of it. But I say no legislation of this kind is necessary, because, if articles are shipped from one State to another, the people of that State have full police power and they can confiscate those articles if they are deleterious; they can imprison the offenders; they can do anything they please, and every manufacturer is bound to protect the retailer or he will lose his trade. That is the way the thing works. In my judgment trade in deleterious foods under the State laws has been very largely reduced.

The CHAIRMAN. Let me ask you, is there any considerable amount of deleterious foods in the market?

Mr. MILLER. Mr. Chairman, upon that point, with the consent of the chair, I would prefer to let that be answered by Mr. Frank H. Madden, who is present, and one of the largest manufacturers and a practical man on that question. I simply have charge of the legal department.

The CHAIRMAN. I simply wanted your opinion as a practical man

and engaged largely in business, and whose area of vision must be ample and whose opinion should be valuable to us.

Mr. MILLER. Mr. Chairman, my belief is this: That when the agitation began on the food question there was a considerable supply of deleterious articles on the market. I think that while the State laws are very crude, yet they have had a good effect, and that the deleterious foods on the market now are comparatively small. That is my judgment.

The CHAIRMAN. Let me ask you if, in your judgment, there is any considerable quantity of adulterated foods, and when I use the word "adulterated" I mean with the view or with the purpose to perpetrate fraud—anything like serious deceit?

Mr. MILLER. Mr. Chairman, I answer no; but when I make that answer I want the committee to understand that I believe that there are harmless additions to certain articles of food, to render it more palatable, such as starch in chocolate, or glucose in sirup, which is perfectly wholesome.

Mr. ADAMSON. Pursuing the question of the chairman a little further, I would ask whether in the entire volume of business through the country, and in the goods placed in the stores to sell, the per cent of adulterated and deleterious articles is not very small?

Mr. MILLER. Yes, sir; that is true.

Mr. ADAMSON. And exceptional?

Mr. MILLER. Yes.

Mr. COOMBS. What was Mr. Grosvenor's statement about that?

Mr. MILLER. I did not hear his statement, unfortunately; I was absent during a part of his remarks.

Mr. COOMBS. I understood him to say that it was about a third, but he may have referred to some particular State; I am not certain about that.

Mr. MILLER. I did not hear his statement on that point.

Mr. RICHARDSON. The decrease, then, in these adulterated or deleterious ingredients of foods you would attribute to the agitation that is going on in the country; you would attribute that decrease to the publicity that has been given to it?

Mr. MILLER. Yes, sir; I think the publicity that has been given has had a very wholesome effect.

Mr. ADAMSON. Does not the respect that the dealers have for their own interests, as well as the efforts of the people who want pure food, tend to keep down the per cent of deleterious adulterated foods?

Mr. MILLER. Yes; very decidedly.

Mr. COOMBS. Did you ever see a dealer that would make a man think that he had something which was just what he wanted, although he did not have the article that was called for?

Mr. MILLER. In answer to that question I will say this: In my judgment it is natural for a man who has, for instance, a horse to sell to make him appear as much to advantage as possible, to show his good points; and dealers in food products are not exempt from that disposition or weakness; but I do not believe that there is any wholesale house in this country that is to-day putting out merchandise which is deleterious to health.

Mr. MANN. Mr. Miller has said that Mr. Madden wishes to make a statement. I suggest that if Mr. Miller wishes to make a further statement in writing he can do so.

Mr. MILLER. There were some other things I wanted to say, but I will give way to Mr. Madden, and I think I shall ask the further indulgence of the committee on one or two points later on.

Mr. MANN. As the chairman has suggested, if you do not get a chance later on, you may make any suggestions you desire to make in writing and they will be printed, because I suppose all these hearings will be printed.

Mr. MILLER. I wanted to discuss the labeling feature; I wanted to make some comparison between the Hepburn bill and the Corliss bill. But I wish to give way to Mr. Madden, temporarily, at least.

The CHAIRMAN. I would like to have you speak in reference to that subject either now or some other time.

I have agreed to recognize Mr. Moses after you are through. I would like very much for you to show the deadly parallel between these bills at some time.

Mr. MILLER. Mr. Chairman, I would not like to put it that way. You call it a deadly parallel, and I would not put it just that way; but I wanted to show the difference in the principle of the two bills.

The CHAIRMAN. That is what I mean.

Mr. MILLER. Because I feel that the Hepburn bill is not practicable in some of its features. For instance, if that bill were to become a law on the 1st day of July next the goods that have been packed earlier in the season, although perfectly wholesome, in case the Commissioner should make rulings that are adverse, might be prejudiced in the market—that is, that there would be danger of it not being in accordance with the rulings.

The CHAIRMAN. I do not think you will find that any member of this committee is especially wedded to any method. We are inquiring.

Mr. MILLER. I understand that that is the position of the committee, and I am thankful for the committee's attention.

STATEMENT OF MR. ROBERT H. MOSES, OF NEW YORK CITY.

The CHAIRMAN. Please state your residence and business.

Mr. MOSES. I am a resident of New York City; I am a wholesale confectioner.

Mr. Chairman and gentlemen, I have just stated I am a wholesale confectioner, to which I will add I am a member of the National Confectioners' Association. There are present Mr. James Matchett, the president of the association, and Mr. H. W. Hoops, the chairman of the executive committee. They have been kind enough to ask me to say these few words that we think necessary in behalf of the confectionery industry. They have also prepared a brief statement which we desire to put on file, and which I will read:

BROOKLYN, N. Y., March 11, 1902.

Hon. WILLIAM P. HEPBURN,

Chairman Committee on Interstate and Foreign Commerce.

Mr. CHAIRMAN: We appear before your committee as the representatives of the National Confectioners' Association, which was organized eighteen years ago, its first object being to prevent the hurtful adulteration of confectionery.

Through the efforts of this association pure-candy laws have been passed in thirty-three States and the District of Columbia, and similar laws also exist in six other States.

This association has been represented at each of the pure-food congresses held in this city since 1888, and has steadfastly endeavored to have incorporated in a national

pure-food bill the same provisions that now exist in the statutes of nearly all the States.

What is known to us as the "confectionery clause" was embodied in the Brosius bill as favorably reported by the Committee on Interstate and Foreign Commerce two years ago, and this bill was entirely satisfactory to the confectionery industry which we represent.

The present House bill, No. 3109, also contains the "confectionery clause," and all that we ask is that it shall not be eliminated and that whatever pure-food measure may be reported by this committee shall contain the specific definition of adulteration in confectionery which is found in lines 18 to 19, inclusive, on page 5 of bill No. 3109.

This clause distinctly defines what shall constitute adulteration in confectionery and is precise in its terms and easily understood. Any pure-food law which does not make a separate and specific classification of confectionery would restrict and annoy honest confectioners while lacking that clear and exact definition which would effectually prevent harmful adulterations. This separate classification of confectionery has been almost universally adopted by such States as have enacted general pure-food laws, and it is of the very greatest consequence to confectioners that a national law intended for regulating interstate traffic shall not conflict with the State laws now in force dealing on the same subject.

The National Confectioners' Association has devoted its energies for eighteen years to the prevention of adulteration in confectionery. We want Congress to help us, not to hinder us. The confectionery clause as it now stands in House bill No. 3109 is all right. We want to be sure that it will stay there.

Respectfully submitted.

JAMES J. MATCHETT, President.

H. W. HOOPS,

Chairman of Executive Committee.

Now, I want to say, Mr. Chairman and gentlemen—and it is the principal excuse that we have given for appearing before this committee—that we have had a very large experience in our particular line of pure-food legislation; that is, in regard to confectionery. I have already stated that we have pure-candy laws passed by the efforts of the National Confectioners' Association in 33 States. In many of those States there are no other pure-food laws of any sort. For instance, we have pure-candy laws in every Southern State. Very few of those States have any other pure-food laws of any kind. We have a pure-candy law in the District of Columbia.

Mr. MANN. Your definition of impure candy is only that it would contain ingredients that are deleterious or detrimental to health?

Mr. MOSES. That is our position, and we claim that there can be no other standard for candy.

Mr. MANN. It would not prevent the use of harmless adulterants?

Mr. MOSES. We claim that there can not be any harmless adulterant in candy—that is to say, that confectionery must of necessity be pleasant to the eye and palatable to the taste. If there is any ingredient that can go in confectionery that is palatable to the taste and agreeable to the eye, and is harmless, then we claim it is not an adulterant. We do not know of any way of making any other standard than that, and we have followed the subject for eighteen years.

Mr. MANN. Then, outside of its being deleterious, it is a question whether people like the confectionery?

Mr. MOSES. It is a question whether they like it; yes. Practically, confectionery stands a good deal on the same basis as pastry; in one case the foundation is flour and in the other it is sugar. But if your pastry tastes good it doesn't make any difference whether it is composed of flour, or whether it is fruit, or whether it is starch, or what it has in it; if it tastes well and contains nothing injurious, then we claim it is not adulterated.

Mr. MANN. But if this provision in the Hepburn bill were stricken out, defining exactly what is adulteration of candy, you would be subject to the general provisions of the bill which would be more stringent.

Mr. MOSES. That would not be satisfactory to the confectioners. As I say, any other definition would lack that precise meaning which we get at by the clause we now have. That that clause is effective can be shown very clearly from this fact. That when this association was organized and before these laws were passed candy was to a considerable extent adulterated by the use of terra alba, and there was also more or less fault to be found in the matter of colors—for instance, chrome yellow, which is a poison, was largely used by confectioners—I think in many cases by ignorance or carelessness rather than design; but terra alba was used simply because it was cheaper than sugar. But as all of you know, it is an earth, it is injurious to the stomach, and its use should be prevented by law, and it is now prevented by law.

And I want to say this in regard to confectionery. That, contrary to the generally received opinion, there is no adulterated confectionery.

Mr. MANN. Is it not the fact that people generally suppose that the sweetness in confectionery comes from sugar.

Mr. MOSES. The sweetness ordinarily does come from sugar.

Mr. MANN. Do you not use a great many other things, like glucose.

Mr. MOSES. Glucose is only another form of sugar. It is made from starch and is not crystallized sugar. It is used to a considerable extent; yes, sir.

Mr. MANN. Still, this bill would prevent the man from selling glucose without stating what it is.

Mr. MOSES. That is possibly the case. We do not represent candy as being sugar candy; it is not so represented.

Mr. MANN. People believe it, though. You know more about that than I do.

Mr. MOSES. There are a great many kinds of candy in which sugar forms but a small percentage. Suppose you go out and buy 5 cents' worth of peanut bar. How much sugar is there in that? Simply enough to hold the peanuts together; that is all.

Mr. TOMPKINS. What is glucose?

Mr. MOSES. A sirup made from starch, which ordinarily is gotten from corn. It might be made from potatoes, or, I suppose, from other substances, but, as I understand it, these various substances are converted into starch, and glucose is the sirup from the starch.

Mr. TOMPKINS. Is it at all deleterious?

Mr. MOSES. On the contrary, it is held by scientific authority to be quite as wholesome as the sirup from cane sugar.

Mr. COOMBS. That is largely used in the manufacture of candy, is it not?

Mr. MOSES. Very considerably used.

Mr. COOMBS. What per cent?

Mr. MOSES. That would be difficult to determine. Some classes of confectionery do not have much in it; in other classes there is a very considerable quantity in it. In a general way, I would say that glucose is used in confectionery for the reason that it will not granulate and in candy that it is desirable to use a considerable quantity of glucose.

Take chocolate caramels, for instance, with which we are all familiar. They are kept soft and plastic by the addition of glucose to the sugar.

Mr. COOMBS. With pure sugar they would not keep their consistency?

Mr. MOSES. You would have to use something else. You would have to convert your cane sugar into uncrystallizable sugar by the addition of tartaric or some other acid.

Mr. MANN. Take the chocolate in chocolate caramels—

Mr. MOSES. What about that?

Mr. MANN. What is the chocolate in chocolate caramels made out of?

Mr. MOSES. I don't know that I can answer that. I will refer that to Mr. Hoops, who is a manufacturer of chocolate. He can tell better than I can.

Mr. HOOPS. That is on the outside of chocolate?

Mr. MANN. Yes.

Mr. HOOPS. It is composed of chocolate and sugar mixed; that is all.

Mr. MANN. There is no controversy at all in reference to the confectionery provision in this bill, is there, Mr. Moses?

Mr. MOSES. We hope not; but the trouble has been that while we have had this clause inserted a number of times in the different pure-candy bills someone has come along and struck it out. That we do not want done. As I say, we think we occupy a unique position in the manufacture of pure-food products. I do not know of any other organization that was formed simply for the purpose of preventing an adulteration in its products, and we have spent a great time and a great deal of money in trying to prevent it, and if there is to be a national law passed on the subject we want it to conform to the State laws substantially that we have already gotten.

Mr. RICHARDSON. You have found no trouble in the enforcement of the State laws?

Mr. MOSES. We have had no trouble whatever, and the adulteration of candy in consequence of these laws has been absolutely stopped. I might add that we have a very capable force for carrying these things into effect. We have a reward offered, and have had it for years and years, of a hundred dollars—

Mr. RICHARDSON. I mean you have secured all your purposes in the enforcement of the State law.

Mr. MOSES. We have; yes. But of course we would like to have a national law on the subject also.

Mr. RICHARDSON. Why?

Mr. MOSES. Because it forms a basis which the States will follow, and for another reason: We pass a pure-candy law. Say, for instance, it is in the State of Pennsylvania or in regard to some of these Southern States which have not pure-food laws as a rule. Some one comes along with a pure-food law, and at the bottom is tacked on a clause repealing all former pure-food laws, and this law we have had passed at so much trouble in regard to pure candy is repealed, and we have got to have it reenacted or have to have a national law that we can work under. Another reason why we want a national law is—

Mr. RICHARDSON. You do not want the national law to come in conflict or to set aside the State law on that subject; you are satisfied with the State laws?

Mr. MOSES. We are satisfied with the State laws, yes, because the State laws we have had passed ourselves; they have been the bills we

have introduced, and we want a national law to follow the lines that have already been marked out.

Mr. TOMPKINS. The national law you would want to be supplementary to the State laws?

Mr. MOSES. To be supplementary, for the reason, as I have said, we have laws in 33 States in precisely the wording of our own construction, and in 6 other States laws which are reasonably satisfactory. So that there are only a few States in which we have not already these laws.

Mr. RICHARDSON. I think the interest you represent is exceedingly important, and I do not think anybody could have any difference of view on that question, because the adulteration of candy is something that largely affects young children who have not the strength that grown people have to resist the adulterations, and so the adulteration in such a case is much worse than in the case of foods which are eaten by grown people; and if you have accomplished such good results with State laws, why can not it be done with food products generally?

Mr. MOSES. I suppose the answer to that might be this. We have a law regulating the adulteration of candy in the District of Columbia. We passed that law through Congress with very little difficulty. The difficulty that attaches to the passing of a pure-food law is that so many laws have been before Congress for a great many years and still nothing has been accomplished. While our interest is an important one, still it is only a single interest, and we were able to get a bill through; but you see to pass a general law seems to be a difficult matter.

Mr. RICHARDSON. If you had a law in reference to the purity and wholesomeness of all the ingredients that went into your goods, and each one had to be labeled, you would be troubled, too, would you not?

Mr. MOSES. Yes; I suppose we would.

Mr. COOMBS. Would you object to labeling?

Mr. RICHARDSON. Would you object to labeling every ingredient in your goods?

Mr. MOSES. We do object, very decidedly.

Mr. RICHARDSON. Why?

Mr. MOSES. In the first place, the great body of our goods are shipped in bulk.

Mr. RICHARDSON. Is it not a fact that the matter of taste and color and agreeability to the eye is exceedingly important in your industry?

Mr. MOSES. Unquestionably so; we have to please the eye as well as the palate.

Mr. RICHARDSON. You might leave the coloring off and a child—or a man or woman either—would not buy your candy?

Mr. MOSES. That is true.

Mr. RICHARDSON. Although it would be perfectly harmless?

Mr. MOSES. Perfectly harmless. I will read the law as it stands to-day in the District of Columbia:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no person or corporation shall, by himself, his servant or agent, or as the servant of any other person or corporation, manufacture for sale or knowingly sell or offer to sell any candy adulterated by the admixture of terra alba, barytes, talc, or any other mineral substance, by poisonous colors or flavors or other ingredients deleterious or detrimental to health.

Sec. 2. That any person or corporation convicted of violating any of the provisions of this act shall be punished by a fine not exceeding \$100. The candy so adulterated shall be forfeited and destroyed under the direction of the courts.

SEC. 3. That it is hereby made the duty of the prosecuting attorneys of the District of Columbia to appear before the people and to attend to the prosecution of all complaints under this act, and in all the courts of said District.

SEC. 4. That this act shall take effect upon its passage.

Approved May 5, 1898.

A similar law was passed in the same year in the State of Iowa, and there are such laws in all the States or nearly all the States which are represented by the various members of this committee.

We come before you, gentlemen, as advocating the Hepburn bill with the confectionery clause as it stands, and if that bill or any similar measure becomes a law we want the confectionery clause to be retained in it.

Mr. RICHARDSON. If the confectionery clause was stricken out would the other provisions apply to you?

Mr. MOSES. The bill would not suit us then at all.

Mr. RICHARDSON. Would it apply to you?

Mr. MOSES. I suppose it would in a way; but confectionery, as I said before, comes so near to cookery that a general pure-food law that did not make a separate classification would not seem to reach us.

Mr. COOMBS. It is not food, is it?

Mr. MOSES. Why not?

Mr. RICHARDSON. I do not understand that it is food.

Mr. MOSES. I suppose it would come under that general classification. It is not medicine, it is not drink; I do not know what you can call it if it is not food.

Mr. RICHARDSON. I do not see why the law should not apply to medicine, because that relates more directly to the health of the people of communities even than food does.

Mr. MOSES. But if you will refer to the Hepburn bill you will find the drug men have a separate classification, the same as we have.

The CHAIRMAN. If you submit the question to the children they would say it is food.

A BYSTANDER. Do not many people eat chocolate for food?

Mr. MOSES. There is no doubt about it.

Mr. RICHARDSON. But the general acceptation is not that it is food.

Mr. MOSES. Perhaps not; but I think the dictionary meaning of the word would be that confectionery must be classed as food, and I think that is the construction put upon it by those who have prepared the general pure-food laws; and where there is not a separate classification of confectionery they have considered that confectionery is included in the term food.

I will say that this association, known as the National Confectioners' Association, prepared, a number of years ago, a compilation, not only of the pure-candy laws that were in existence in this country at that time, but also of all the pure-food laws up to 1898, of which your chairman has a copy.

The CHAIRMAN. The hour for adjournment has arrived. The committee will be in recess until half past 10 to-morrow.

Adjourned.

SATURDAY, *March 15, 1902.*

The committee met at 10.30 o'clock, a. m., Hon. William P. Hepburn in the chair.

STATEMENT OF MR. FRANK H. MADDEN, OF THE FIRM OF REID, MURDOCH & CO., OF CHICAGO, REPRESENTING THE WHOLESALE GROCERS OF CHICAGO AND THE CHICAGO COMMERCIAL EXCHANGE.

Mr. MADDEN. Mr. Chairman and gentlemen, I have been engaged in the wholesale grocery business practically all my life. I have been with my present concern, Reid, Murdoch & Co., since 1876. For the last fifteen years I have been manager of their manufacturing department, in which we manufacture and repack many kinds of food products.

Mr. MANN. I wish you would state how large a concern Reid, Murdoch & Co. is.

Mr. MADDEN. Reid, Murdoch & Co. are one of the largest wholesale grocery firms in the world. We employ some 600 people all told and sell our goods in almost every State and Territory in the United States. In the manufacturing department alone we employ some 250 people.

We manufacture preserves, jellies, jams, marmalades, flavoring extracts, sirups of all kinds, pickles, sauces, catsups, and so forth. We import olives, olive oil, capers, and repack some in bottles and various kinds of packages suitable to the trade. We also manufacture self-rising flours and repack self-rising flours and cereals.

Since establishing this department it has been our aim and ambition to make a high class of goods and to justly earn a reputation for the meritorious quality of our goods. Popular demand, however, makes it necessary for us to manufacture goods of medium quality. But we have never knowingly put any goods upon the market that were injurious or deleterious to health. We have a laboratory and a chemist in charge of it, and great care is exercised that our goods shall be creditable to the reputation of our firm.

Mr. ADAMSON. When you say goods of medium quality, you do not imply such a thing as medium purity, I suppose?

Mr. MADDEN. No, sir; I mean lower-priced goods, but pure and wholesome.

I trust you will pardon me for these details, but it is my desire to show you that a reputable manufacturer, who is trying to educate the consumer to using high-class goods is harassed and embarrassed and his business materially impaired by the operation of the State food laws, which are practically the same as bill 3109, known as the Hepburn bill.

Mr. Miller, speaking for the same interests I represent, informed you fully in his address yesterday as to why we took no especial interest in pure-food legislation until we learned by experience, the danger and injury to our interests by the various State food laws in States where we do business. So I will not go any further into that question, but will endeavor to show you from the standpoint of a merchant and manufacturer why we are favorable to the Corliss bill (No. 12348) and are opposed to the Hepburn bill—3109.

In the first place, there are very few goods, to the best of my knowledge and belief, now being manufactured and sold that are injurious or deleterious to health. It is a public impression among the people at large that there is a great deal more fraud, a great deal more deleterious and unhealthy food sold than is the fact. You have no doubt read in the papers many times that canned goods were poisonous, that people were injured by the use of such goods, by eating vegetables and fruit put up and hermetically sealed in tins. I want to say to you that with thirty-five years' practical experience in the wholesale grocery business I have never known of a single authenticated case of poisoning as the result of eating canned goods. In one or two instances I can recall the case of people being injured by eating goods that have been put up in hermetically sealed tins, but upon investigation it has been proven that the tins had been opened, that they had been allowed to stand for a length of time, and the contents had become unwholesome and unhealthy. This might happen to any goods if treated in the same manner, whether they had been put up in tins hermetically sealed or not.

Mr. COOMBS. Right there let me interrupt you. If you have goods in tins and open them and permit them to stay in the tins they become poisonous?

Mr. MADDEN. Yes; they are liable to.

Mr. COOMBS. Whereas if you empty them into something they would keep?

Mr. MADDEN. Yes, if you empty them into glass or something else they will keep a reasonable time the same as any other article.

Mr. COOMBS. And you attribute this poisoning in this case to the fact that the goods had been exposed or to leakage or something of that kind?

Mr. MADDEN. No; they had been opened. A housewife will get a can of lobster, for instance, and open it and use a portion of it and probably put the tin, containing the lobster that is not eaten, back into the ice box and it may stand in a semicool place, it may be kept cold, but it does not keep it from turning bad. She may leave it there for three or four days and then serve it again, and the exposure has made it unwholesome, and perhaps people who eat it are made sick.

Mr. COOMBS. Is that by the lobster or whatever it is coming into contact with the tin?

Mr. MADDEN. I could not answer that; I am not enough of a chemist to tell you that. I know that is the practical result.

We often read in the newspapers that the great bulk of food products is poisonous and absolutely unfit to give in food. These articles are usually inspired by professional men, notably doctors and chemists, who are always discovering bugaboos, many of which exist only in their own minds. And with all due respect to these professions, is it not true that we often find such a wide difference in their views as to make it difficult to form an intelligent opinion as to the facts? As an instance of this, I submitted to a chemist in Chicago last year four samples of preserved fruits out of the same package, they being made by ourselves, we knowing absolutely what they contained. Imagine our surprise when we received the certificate of analyses to find that the chemist had certified to four different results, none of which were correct.

Mr. MANN. Was that a good chemist?

Mr. MADDEN. He had a reputation.

Another example is a case where, in a city not 200 miles from here, a customer to whom we had sold a quantity of fruits and sirups for soda-water purposes reported to us that a reputable chemist of their city had analyzed the fruits and found they contained 40 per cent of glucose. Knowing that they contained only fruit and sugar, we authorized them to send samples for another analysis to any prominent chemist they might select, we offering to pay the expenses. They did so, with the result that they became entirely satisfied as to the purity of the goods. The chemist that had analyzed the goods in the first place had simply made an error of some kind in his calculation. I do not think he did it willfully, but the effect was the same.

Still further illustrating the liability to error in assuming that it is the fault of deleterious or unhealthy substances in food products when they are complained of, I will mention an instance that occurred with our firm last summer. From a prominent western city, some few miles from Chicago, we received a complaint that some preserved fruit for fountain use that we had sold to a customer had, when dispensed at the fountain, made people violently ill.

I presume you all know how they dispense the soda at the fountain. They draw a little syrup, and in case of what is called ice cream soda, they will have a dish on the table with various kinds of fruit—pineapples, strawberries, cherries, and so on—and then they will put a spoonful of ice cream in with the fruit and pour the soda water on top of all. This customer was very much incensed at us and charged that we were shipping him fruits that were poisonous. We immediately telegraphed to send us two sealed samples of the fruits complained of, which we delivered to two prominent chemists, stating to them that complaint had been made that they had made people sick and that we wanted them to be extremely thorough and careful in their researches, as we must have the absolute facts.

In due time we received their reports and both chemists pronounced the strawberry preserve free from any deleterious or unhealthful substances. One of them in his test stated that he had fed the fruit to canary birds without injury to them, and had also taken a portion of the sample to his home and had it served on his own table to himself, wife, and children, being very much alarmed at the seriousness of the matter. As soon as I obtained the chemists' reports I took the train and went to the city to see the customer myself. We went to work to see if we could discover some other cause for the trouble, with the result that upon examination of his fountain it was ascertained beyond the question of doubt that all the trouble was caused by metallic poisoning arising from the corroded condition of the metal receptacle in the fountain that contained the sirup. I may add that our firm was completely exonerated, and we are still supplying that customer with all his goods of this kind.

During one of the statements made by Mr. Grosvenor, I think, two or three days ago, to which I listened, the question of jelly came up. I think Mr. Hepburn asked Mr. Grosvenor a question in regard to it. I would like to say to the chairman if there is anything regarding the manufacture of jelly that he would like to know, as a practical man I would be pleased to supply that information. You may be surprised to know that 95 per cent of the entire quantity of jelly consumed in this country is of the cheaper grades. I mean not ordinary grades.

but of the very cheap grades, goods that are sold at from 2 cents to 2½ cents a pound by the wholesaler.

Mr. COOMBS. What do you mean by low grades—the original fruit?

Mr. MADDEN. I will explain to you just how it is made.

Mr. FLETCHER. Do you say 2½ cents per pound?

Mr. MADDEN. Yes, sir; I mean to say we are selling to-day in Chicago pails of jelly containing 30 pounds at from 60 to 65 cents per pail, including the pail, and it is not unclean and it is not injurious to health.

Mr. FLETCHER. Will you please tell us what it is made from?

Mr. MADDEN. Yes, sir; it is made from the juice derived from apple skins and cores and glucose; it contains no sugar whatever. I presume the public, on hearing this statement, would assume that we went out in the street and let boys pick up apple cores and gather apple peelings and use that kind of stuff. These skins and cores or apple waste come from the manufacturers and evaporators of apples, largely in New York State and Michigan. In former years, when apples were dried, the skins and cores were thrown away. Now the apples are peeled and cored by machinery and are evaporated the same as the fruit, and are a standard article of commerce. It is conceded, I believe, by all chemists that the gelatinous properties of an apple are in the skin and cores. These skins and cores—apple waste—are packed in bags or barrels; they are thoroughly dried—they have been evaporated—and then they are shipped all over the country and used by manufacturers in making cheap jellies and, I guess, some other products that I am not familiar with. The process of manufacture is to take this raw material of skins and cores, put them into vats, and boil them until they are reduced to a pulp. Then, with powerful presses, the juice is extracted from the pulp, filtered and clarified, and put into copper kettles, and mixed with glucose and boiled to a jelly.

Mr. MANN. Is there no large proportion of gelatin used in these jellies?

Mr. MADDEN. None whatever that I know of. I have never used any gelatin in my life except the make that is known as calves' jelly.

Mr. MANN. Is not that the popular impression—that they use a great deal of gelatin?

Mr. MADDEN. That is the popular impression, perhaps. It is the popular impression that we use everything that is rotten and bad—

Mr. MANN. There is nothing rotten and bad about that.

Mr. MADDEN. No; but it is the popular impression that it is made with gelatin.

Mr. COOMBS. What do you call this compound that you speak of?

Mr. MADDEN. Before the State laws went into effect it was sold as jelly.

Mr. COOMBS. Just jelly?

Mr. MADDEN. And it was labeled with the various flavors. I do not defend that—I do not think that is right; but I call your attention to the fact, gentlemen, that jelly is descriptive, jelly is a condition.

Mr. MANN. We understand about that. You say it is flavored with the various flavors; that is, you could give it the flavor of currant jelly or any of the fruit jellies by putting in a flavoring extract?

Mr. MADDEN. No, sir; I mean to say to you frankly that this jelly, without any flavoring of any kind, was sold for strawberry jelly, raspberry jelly, or some other kind of jelly, until the custom came about

that the labels denoting the flavors would be sent to the retailer and he could make his own flavors. We do not indorse that.

Mr. COOMBS. What advantage is there to the customer to know exactly what the ingredients of that are?

Mr. MADDEN. There may be none.

Mr. COOMBS. But assuming that we would know it to be pure, and it is palatable and cheap, why would not putting on the label what it contained popularize it?

Mr. MADDEN. I will tell you. There are trade conditions that we are not responsible for. I would be very glad if it were possible for us to sell every food product under its own name, and sail under the proper colors, but it can not be done. The reason for that is the prejudice in the minds of the people, and how strong that prejudice is I will endeavor to show you to a certain extent. I think it is generally admitted by all of the prominent chemists of the world that glucose is a healthful food product, equal, if not superior, to pure sugar.

Mr. COOMBS. Do you not think, though, the idea that it is not pure arises from the fact that it has been hidden for a very long time; they have tried to hide that fact?

Mr. MADDEN. I will answer that. It has not been hidden. The Department of Agriculture has investigated it, and has published it broadcast; a Congressional committee, I believe (it may have been a committee from the Department of Agriculture), was appointed some ten or fifteen years ago, and it has been exploited all over the country that it is pure, and yet I want to say to you that 98 per cent, in my judgment, at least 98 per cent of the thinking public, consider it something vile and unfit for food.

Mr. COOMBS. Do you not think, in justice to glucose, that they should discover that it is wholesome?

Mr. MADDEN. Yes; but I do not want to pay the bills myself for doing it.

Mr. COOMBS. Then it is a matter of self-interest to you?

Mr. MADDEN. To a considerable extent; yes.

Mr. COOMBS. The issuing of documents by the Department is one thing, the fact of a family eating it and being put upon their own responsibility and making a personal investigation is another thing. Why would not the latter result if they were privileged to know what they were consuming?

Mr. MADDEN. I think in time they would. It would take years and years, and in the meantime I think that the people who undertook to do it would suffer very largely in profits, their business would be very much impaired.

Mr. RICHARDSON. And without accomplishing any real substantial benefit?

Mr. MADDEN. Yes, sir. Now, then, I spoke of the article of preserves.

Mr. MANN. You were going to tell us, on the subject of jelly, how you label the jelly now.

Mr. MADDEN. Under the various State laws we are now compelled to label this jelly in various ways. The usual form is "Imitation jelly, colored." That has had the effect of destroying the trade and the consumption in these States to a very marked degree. Six or seven years ago we had a trade at one time of something like a thousand pails of that jelly a day. To-day I do not believe we sell 20; and yet

it is a pure food and healthful, and is demanded by the poorer classes of the people.

Mr. RICHARDSON. Is it not that character of jelly that goes among the poorer classes of the people?

Mr. MADDEN. Yes; almost entirely.

Mr. RICHARDSON. And when you mark that "imitation" it destroys its sale?

Mr. MADDEN. Yes, sir.

Mr. RICHARDSON. And they were perfectly satisfied with it before, because there was nothing unwholesome in it in the way of an ingredient?

Mr. MADDEN. Yes, that is the only objection we raised to branding these goods in the way that the Hepburn bill says they shall be branded.

Mr. COOMBS. Does the Hepburn bill say you must brand them as imitation?

Mr. MADDEN. Our experience is under bills that are almost identical with the Hepburn bill, and under those the commissioner who has in charge its operations has made rulings that operate in that manner.

Mr. COOMBS. I had understood that the Hepburn bill required them to brand them as they were, and the reverse of imitations.

Mr. MANN. So this branding would have the same effect, whether the jelly was made out of apple cores and glucose or something deleterious?

Mr. MADDEN. That is it exactly. If we were to brand it "glucose jelly" it would have the same effect.

Mr. RICHARDSON. Your position, as I understand it, is that you are as anxious as anybody else to eliminate all ingredients that are of an unwholesome character?

Mr. MADDEN. Absolutely.

Mr. RICHARDSON. I would like to get your idea about it. Do you think that a mere confiscation or condemnation of goods will accomplish that; don't you think you will have to put something else to it?

Mr. MADDEN. In my judgment, no, sir.

Mr. RICHARDSON. Why, why? You can not regulate people on other subjects by merely confiscating. I do not know of anything in life that people deal with or trade with that you can stop them from by merely taking their goods. You have to go a step further—not only take their goods but punish them. That is what controls men; it is punishment in addition to loss of property. You give us your views about that; I would like to hear them.

Mr. MADDEN. Answering the gentleman, I will refer him to the statement of Mr. Moses, of New York, yesterday, who spoke for the confectionery trade. Under the confectionery clause of the Hepburn bill, under the laws that Mr. Moses stated they had had passed in so many different States and Territories—

Mr. RICHARDSON. You mean the candy gentleman?

Mr. MADDEN. Yes, sir.

Mr. RICHARDSON. He did not want labels to be put on showing all the coloring that went with the candy; that is a different thing.

Mr. MADDEN. But I am coming to the question of the penal clause. I am not discussing the question of fraud now; I am discussing as to why confiscation is sufficient.

From Mr. Moses's statement I gather that with the clause that does not require formulas of any kind to be put upon the goods they have

entirely eradicated from the market all impure and unwholesome candies, and that they have never had a single prosecution or conviction. The point I desire to make is that the penalty of confiscation, the publicity to a manufacturer, absolutely will prohibit the manufacture of unhealthy or deleterious food. Manufacturers of food products, the large majority, are large concerns that have large capital invested in their business. They can not afford as a business proposition, no matter how dishonest they might be, to make goods and turn them out that are deleterious to health.

Mr. MANN. If that becomes known?

Mr. MADDEN. If it becomes known. No sane man, in my judgment, could afford to take the risk as a business proposition, knowingly or willfully, to turn out goods that he knew to be deleterious or injurious. It is inevitable that in the end it would react and ruin his business, and his standing as a citizen. I do not believe that you could make any punishment more severe than confiscation.

As an illustration of that, under the present food laws in the State of Minnesota a commissioner has just ruled that all preserves containing glucose must be branded "mixed and adulterated."

Mr. MANN. I call your attention to the provision of the He burn bill in that respect, which not only requires goods to be labeled "imitation," but also requires them to state the ingredients of which they are composed.

Mr. MADDEN. That is in the clause?

Mr. MANN. No, no; that is all food products. There is an exception. I will read:

In the case of articles labeled, branded, or tagged so as to plainly indicate that they are mixtures, compounds, combinations, imitations, or blends: *Provided*, That the same shall be labeled, branded, or tagged so as to show the character and constituent thereof.

Now, that covers everything that is an imitation, and the things you speak of are so held.

Mr. MADDEN. Under that clause our contention is that your food commissioner would have the authority to make the rulings and prohibit the sale of any food products without they are branded exactly in accordance with the contents. In fact, in our judgment it gives him almost unlimited powers as to rulings, and I will get to this subject in a moment. I want to go a little further.

The CHAIRMAN. Before you get off that subject of publicity and confiscation, do you know—and you have given it thought and attention and study, I have no doubt—any precedents that apply to any other character of goods prohibited or forbidden which are confiscated—which are suppressed by confiscation or publication—do you know any precedent?

Mr. MADDEN. On confiscation?

Mr. RICHARDSON. Yes, about any article or anything else in life, where that is resorted to alone—publication and confiscation—to prevent the offense?

Mr. MADDEN. Personally I do not. I have not given any attention to the legal end of these laws.

Mr. RICHARDSON. I am taking a practical part of it.

Mr. MADDEN. You are speaking of confiscation?

Mr. RICHARDSON. Yes.

Mr. MADDEN. That becomes a legal feature of it, and we have a

representative here who is from our firm, and he takes care of that branch, and if you have no objection I will ask him, or you can ask him directly, if he has any knowledge of that kind.

Mr. NEWTON. Not in regard to food products, no; there is no law except the confectioners' laws. Some of those laws have cleared the market of deleterious candies entirely. In other words, the capital of the manufacturer is his reputation, and if he gets a reputation of turning out deleterious candies he might as well close his doors immediately and go out of business. In other words, we believe that confiscation strikes at the root of the evil, the point of origin, and stops it from that point rather than taking an individual simply and attempting to destroy the evil by taking the small portion or particle that we find. We want to strike at the root of it and stop the manufacture.

Mr. RICHARDSON. As I understand the purport of all penal statutes is not so much to punish the man himself as it is to admonish others; that is the spirit and meaning of a criminal statute.

Mr. NEWTON. I will say this; that I have had experience in several hundred pure-food prosecutions. I never heard of but one case where the penalty of imprisonment was given. As a matter of fact a fine is invariably the penalty. Now, confiscation of goods is a much greater penalty than any of the fines prescribed by any of the other laws. In other words, it is not the fear of imprisonment that acts as a deterrent—it is the publicity attending the prosecution of the dealer. He fears that much more than all the other penalties combined; he fears publicity more than even the money loss, because, as I stated before, the basis of that man's business is his reputation, just as much as the lawyer's basis for his reputation of being a good man for a certain thing is by reason of his character, and the character of a business man and the publicity given his business by being branded or published as selling deleterious foods is such that it simply drives him out of business.

Mr. MANN (addressing Mr. Madden). As I understand from you, as a practical man, it is your judgment that confiscation of the goods or a fine, whichever would be adopted, would result in stopping the business?

Mr. MADDEN. Yes.

Mr. MANN. Either one?

Mr. MADDEN. Yes.

Mr. MANN. Now, let us go a step further. Your claim is that most of the adulterations must necessarily be by the manufacturers or wholesalers or jobbers, and not made by the retailers themselves?

Mr. MADDEN. Very seldom.

Mr. MANN. If we relied upon complications it practically would mean, I take it, in your judgment, that prosecutions would be aimed at the people who made the goods?

Mr. MADDEN. Yes, sir.

Mr. MANN. Not at the retailer?

Mr. MADDEN. No, sir.

Mr. MANN. But that if you resorted to fines, it is much easier to get at the man who is selling the goods and yank him up.

Mr. MADDEN. That is our idea exactly.

Mr. MANN. As a wholesaler, then, you would be much more liable to be prosecuted under the confiscation clause than the other?

Mr. MADDEN. I think so. I think it would put the responsibility where we think it belongs, and in answer to the gentleman I desire to

say that the manufacturers and wholesalers did not instigate the clause in the Corliss bill or the amended Mann bill—the confiscation clause. They favored a penal clause, and I will say to you now, on behalf of the manufacturers and wholesale grocers, that if an amendment can be made to that clause that will aim only at the manufacturer and the wholesaler, and not harass the innocent retailer and have him made a criminal without guilty knowledge, we will not oppose it. It was done purely and solely for that purpose.

Mr. RICHARDSON. That would let your crowd out entirely.

Mr. MADDEN. No; I am a retailer and wholesaler. I am willing to take the responsibility of the penal clause on the labeling of food either as a manufacturer or as a wholesaler.

Mr. MANN. You, then, have no objection to a penal clause against persons who manufacture goods containing deleterious substances?

Mr. MADDEN. No, sir; I would not have.

Mr. MANN. As I understand it, this was urged by the retailers, because they had no protection against the enforcement of a penal clause?

Mr. MADDEN. Yes; and I want to eradicate from the minds of these gentlemen that the manufacturers and wholesalers are here to ask for legislation to help them or aid them.

Mr. RICHARDSON. Under such a construction as that, how would the public be protected against the retail dealer who will practice the fraud in changing the brand, and so forth?

Mr. MADDEN. You are not protected any way under any bill from that; that comes under the State laws. You could not touch it with a national law, as I understand it.

Mr. MANN. Not unless it was made in the original packages—

Mr. MADDEN. Then he could not have mixed it.

Mr. RICHARDSON. If I catch the spirit of your objection, if I understand you correctly in your argument, what you are objecting to is the law requiring these different labels, of all of the different ingredients, all of which are wholesome and healthy, to be put upon an article?

Mr. MADDEN. That is right.

Mr. RICHARDSON. That applies to the retail dealer.

Mr. MADDEN. Of course the law would apply to everyone. We contend that a pure-food law should begin and end with the preservation of people's health. We contend that once an article of food is admitted to be wholesome and not deleterious to health, it becomes the same in merchandise as any other article of merchandise, and that the consumer or purchasing public is entitled to no more protection and no less protection than it is on any other article of merchandise.

I want to refer to preserves again. As a practical manufacturer, I take the responsibility of saying that, without regard to the cost of materials used, the best preserves that it is possible to make are a combination composed of fruit, sugar, and glucose. The glucose in manufacturing preserves to a certain extent is almost a necessity, because it prevents crystallization, because preserves that are made entirely with sugar and fruit, when shipped over the country from place to place frequently, under certain conditions, granulate and become what is known as sugared; they are therefore unsalable. Glucose prevents this.

Aside from that feature of it, glucose makes preserves more palatable, it not being so strong in saccharine as sugar. It reduces the

amount of saccharine necessary to be used in preserving your fruit, because it operates the same as sugar in the preserving process. But I say to you that the highest priced preserves that are made in the world, the highest priced candies, for the same purpose as our friend from New York, Mr. Moses, told you yesterday, are made with the use of glucose. Yet trade conditions—conditions that we are not responsible for—have fixed in the minds of people that this valuable article that is necessary in making high-grade preserves is vile and unfit for food, and they will not buy it under its true name.

Consequently, if we take preserves and make them the best we know how, according to our best judgment—and I want to tell you, gentlemen, that I have visited nearly every country in the world, I have been in nearly every large jam and preserve factory that there is in Italy and France, and that they use glucose in the very highest class of goods they make, and that they used it when it was very much more expensive than sugar—then, I ask you, why should we be compelled to brand our goods, the very best goods we can make after years of experience, as glucose, and destroy our trade and traffic that we have worked years to build up? It is not fair; it is not reasonable, and I do not believe the people will submit to it.

Mr. COOMBS. You put up olive oil, do you not?

Mr. MADDEN. Yes, sir.

Mr. COOMBS. What are the component parts of your olive oil?

Mr. MADDEN. It depends entirely on the price and the brand under which it is sold.

Mr. COOMBS. How many prices have you?

Mr. MADDEN. I should say half a dozen.

Mr. COOMBS. And that is according to the grade?

Mr. MADDEN. Yes, sir.

Mr. COOMBS. And the cheapness?

Mr. MADDEN. Yes, sir.

Mr. COOMBS. Now, take the lowest; what do you mix?

Mr. MADDEN. That is sold under the brand of salad oil.

Mr. COOMBS. How much do you sell that for?

Mr. MADDEN. It is pure cotton-seed oil.

Mr. COOMBS. And yet you label it olive oil?

Mr. MADDEN. We label it "salad oil." Originally, before the State laws were passed, it was branded as olive oil.

Mr. COOMBS. I am speaking now of what purports to be the pure oil.

Mr. MADDEN. I am talking about bottled oil. The cheapest grade that is sold is composed entirely of cotton-seed oil. The next brand that is sold under the name of olive oil is a mixture of olive oil and cotton-seed oil.

Mr. COOMBS. In what parts?

Mr. MADDEN. It depends on the brand.

Mr. COOMBS. The one containing the least proportion of olive oil?

Mr. MADDEN. I should say the lowest contained from 60 to 70 per cent of cotton-seed oil.

Mr. COOMBS. How much would that be worth a quart bottle? I want to find out what I am eating; that is all.

Mr. MADDEN. I am not familiar with the retail prices. I can tell you about the prices of it in a wholesale way.

Mr. COOMBS. You know, approximately, the price?

Mr. MADDEN. I never pay any attention to it any more than you do.

Mr. COOMBS. How much do you sell it for wholesale, then?

Mr. MADDEN. I should say that grade of oil would sell for about \$4 or \$5 a case of 2 dozen pints, so-called pints, or \$3.50 or \$4 a dozen quarts.

Mr. COOMBS. And you have seven or eight grades of that, you say?

Mr. MADDEN. We import very largely pure olive oil from the south of France and the north of Italy.

Mr. COOMBS. Do you put up any that is marked pure olive oil that has other ingredients?

Mr. MADDEN. No; we do not mark it as pure. We mark it olive oil. We mark some oil "olive oil" that contains other ingredients: yes, sir.

Mr. MANN. Do you use any California olive oil?

Mr. MADDEN. No, sir.

Mr. MANN. Why not?

Mr. MADDEN. It is too expensive.

Mr. MANN. That is what my friend was trying to get at.

Mr. COOMBS. I am much obliged to you for helping me out of my trouble.

Mr. MADDEN. The California oil is very fine oil; it can not be sold as cheap as other oil.

Mr. COOMBS. Is it not sold as cheap as any pure oil?

Mr. MADDEN. No, sir.

Mr. COOMBS. Is imported oil sold pure?

Mr. MADDEN. Yes; you can buy it pure, just as easy as you can buy pure butter or anything else.

Mr. LOVERING. Do you export any oil?

Mr. MADDEN. No, sir; we import and we buy some California oil and the only reason we do not buy more is because it is so high priced.

Mr. COOMBS. But the oil that comes here, imported in bottles, is not pure oil?

Mr. MADDEN. Some of it is and some of it is not.

Mr. COOMBS. Is not pure oil, that which is actually pure, higher in price than the California oil?

Mr. MADDEN. I should say that there are a few well-known brands that are pure; I can say that the majority of the imported bottled oils are not pure.

Mr. COOMBS. Do they use peanut oil to mix with olive oil?

Mr. MADDEN. Or sesame; sesame is more commonly used. If you will allow me, I will tell you how we handle the olive-oil business.

Mr. COOMBS. I would be very glad to have you tell me.

Mr. MADDEN. We import pure olive oil from the various countries in Europe where we believe we get the best quality of oil for the price. We also import sesame oil, which is an oil made from seeds.

Mr. COOMBS. What kind of seeds?

Mr. MADDEN. I can not tell. It is made in the Orient somewhere. We have never used any peanut oil, although we know it is used to a considerable extent. Then we take refined cotton-seed oil, and we make different blends of this oil, commencing with our highest grade, which is under our own brand and is absolutely pure, just as we get it. We do not adulterate it. The next is the combination of olive oil and sesame oil. Sesame oil is almost the same, you might say, in the oil trade, as glucose is in the preserving trade. It is almost colorless and almost tasteless. Then the lower grades are mixtures of cotton-

seed oil and olive oil until we reach pure cotton-seed oil. We sell cotton-seed oil as a salad oil. I do not believe that it is right to sell a mixed olive oil; I do not think the trade necessity requires us to ask you the privilege of selling olive oils as pure olive oils that are mixed. I would recommend that they should be marked "blended."

Mr. COOMBS. Why not say "cotton-seed oil and olive oil" in certain parts?

Mr. MADDEN. You absolutely can not sell cotton-seed oil as a food product under its name.

Mr. COOMBS. You buy cottolene?

Mr. MADDEN. Yes, sir.

Mr. COOMBS. It is bought as much as lard, and it has found its way into the trade under its own name.

Mr. MADDEN. But I venture to say that 99 people out of a hundred buying cottolene will never connect it with cotton-seed oil.

Mr. COOMBS. I think you are mistaken. I live in the far West, and I know it is used there extensively, and it is assumed to be something that comes from cotton-seed oil.

Mr. MADDEN. May I ask Mr. Scherer as to what proportion of cotton-seed oil and lard he sells in his trade in Peoria? The point I am making is that cottolene is sold in districts where they do not know what it is; that where they do know they are opposed to it, and buy lard in preference.

Mr. SCHERER. I do not believe I am competent to speak for the whole trade as to what extent cottolene is used. In that respect I could only speak for our own experience and the experience of two of the largest grocers in Peoria, in each of whose stores one of my boys is head clerk.

Mr. COOMBS. That is where?

Mr. SCHERER. Peoria.

Mr. SCHERER (continuing). Because we have never followed that particular specific article on the subject. We have had cottolene in our store, and I want to say to the gentlemen that where the people can get lard they do not want cottolene. We sell it in a very small proportion.

Mr. COOMBS. If they do not want it in large proportions, you would not want to sell it to them?

Mr. SCHERER. No. The reason is they want lard, and we have standing orders, as I have already said in my remarks before the committee, for country lard. They are, in a sense, prepossessed against cottolene for the use of lard, because they do not know its constituent parts. And in the other stores that are in a different location in Peoria from the ones I refer to where my boys are clerks they sell more cottolene than we do, and the specific reason why I can not give you, but they sell more than we do, but not extensively. People will ask for lard in preference to getting cottolene. That is our experience in that particular locality.

The CHAIRMAN. How do the prices correspond in the retail trade?

Mr. SCHERER. I would judge that lard was dearer than cottolene; that is, taking it into consideration how far they both go, how much they can do with it.

Mr. MADDEN. Again referring to glucose, I want to call attention to another phase of that article that is connected with our business. For the reasons that I have already mentioned we can not sell sirups under the brand of glucose sirups. To-day glucose sirups are more

expensive and cost more money than sugar sirups. The price of glucose sirups to-day, pure glucose sirups, the price of the glucose sugar refining company in Chicago, which controls the manufacturing of that product in this country, is 25 cents per gallon. We can buy sugar sirups, refinery sirups, all the way from 14 cents to 22 cents per gallon. We make mixtures and blends of glucose and cane sirup, and if we brand them glucose sirups and sell them under that name the people refuse to accept them, and it absolutely destroys their sale.

The idea I have in mind is in this case what you term as adulterants, under the construction that would be put upon the Hepburn bill, are more expensive than the other ingredients, because the mixture of these corn sirups is usually on a basis of from 15 to 25 parts of glucose to 1 of refinery-sugar sirup. One of our large houses in Chicago recently, owing to the low price of sugar sirups as compared with glucose or corn sirups, sent out a large advertisement calling attention to the lower price of sugar sirups, the price that they named being less than—

Mr. RICHARDSON. Did you say that they were composed of 25 parts of glucose to 1 part of pure sirup?

Mr. MADDEN. Yes; all the way from 10 parts to 25 parts to 1. The great bulk of the sirup business is sirup that is made with glucose as a base and a small amount of sugar sirup to color and flavor it.

Mr. RICHARDSON. And do you say that that is sold to innocent purchasers in the proportion of 25 to 1?

Mr. MADDEN. Yes; it is sold as sirup.

Mr. RICHARDSON. Do you think that is right?

Mr. MADDEN. Yes; because sirup is a condition; sirup does not mean that it must be derived from sugar or from glucose; it may come from either one.

Mr. RICHARDSON. But if I go to buy sugar and you sell me glucose—

Mr. MADDEN. Yes; but it is a sirup. You might as well say it would not be right to sell New Orleans molasses.

Mr. RICHARDSON. I would like to have it in lesser proportions; I would not like 25 to 1.

Mr. MADDEN. But it is what the people want. We would rather give them all sugar, but all-sugar sirup is too strong; it is too rank. They like the glucose to use, but they do not like it under its name.

Mr. RICHARDSON. That is a pretty strong point.

Mr. MANN. They will sell you sugar sirup at less price, but you won't eat it.

The CHAIRMAN. This is not a case where the rose under any other name would smell as sweet.

Mr. MADDEN. I want to refer to the item of confectionery again. I do not wish to be construed as opposing the confectionery clause in the Hepburn bill or being in opposition to the views expressed by the confectionery trade, because I think they are right; but I only want to make a comparison with what under the Hepburn bill would be granted to that branch of the trade as compared to what other manufacturers of food products would suffer.

If it is a fraud to sell preserves containing glucose without branding as "glucose preserve," what is it when candy is sold containing glucose without branding it "glucose candy?" Where is the distinction? They are both food products. It is not a question of health. How

can you legitimately—how can anyone legitimately say that this branch of the industry, under almost identically the same conditions, can sell a compound that is composed of glucose, starch, and sugar, without any specific conditions surrounding its sale, while another branch of the business must be branded true to name? Is that logical? Is it fair?

It seems to me that, as it is largely consumed by children more safeguards, if any, should be placed around candy than almost any other food product.

Mr. LOVERING. Is there any claim made by anybody that glucose is deleterious?

Mr. MADDEN. Not that I know of; and I will be perfectly frank to say that I can not understand the prejudice in the minds of the people against it; but I assure you that as a manufacturer and as a merchant we can not overcome it.

Mr. RICHARDSON. Is it not owing to its appearance?

Mr. MADDEN. It is the most beautiful thing you ever saw; it is clear, a water white. Did you ever see any?

Mr. RICHARDSON. I don't know that I have; but I thought from the name it was a sort of stringy, sticky stuff.

Mr. MADDEN. That is what we have to contend with.

Mr. RICHARDSON. That would not be acceptable to the eye, and we are controlled very much by the way a thing appears.

Mr. MADDEN. It is white and as pure as anything you could see.

Mr. MANN. I think Mr. Richardson is still under the impression that it is stringy. Tell him what it is.

Mr. RICHARDSON. Yes; I want to know what it is.

Mr. MADDEN. I beg your pardon.

Mr. RICHARDSON. Tell me how you make it.

Mr. MADDEN. It is made from corn. I should say that it is pretty near liquid corn or starch.

The CHAIRMAN. Is it not true that there has been a great change in the manner of its manufacture in the last twenty years?

Mr. MADDEN. I think so.

The CHAIRMAN. Did they not use sulphuric acid in its manufacture twenty years ago?

Mr. MADDEN. I think they did; I think that has been eliminated now, and I think probably some of the deep-seated prejudice against glucose is on account of the sulphuric acid used in its manufacture in past years, and the crudeness in manufacture when it was first put upon the market. I think that is true.

Mr. COOMBS. Is it made from anything but corn?

Mr. MADDEN. No, sir. It can be made from potatoes and wheat, I believe.

Mr. TOMPKINS. A vegetable sirup?

Mr. MANN. It can be made from any starch substance?

Mr. MADDEN. Yes; it can be made from any starch substance.

Mr. RICHARDSON. Then to what do you ascribe this prejudice—is it its name?

Mr. MADDEN. I think when it first came on the market the trade people, the manufacturers and all the trades people, were opposed to it. I remember distinctly when it first came out; I should say it was twenty-odd years ago; it was put upon the market first in the form of a sirup and sold under some trade name.

Mr. TOMPKINS. Was it not called golden sirup?

Mr. MADDEN. Not Moler's Drips, but something of that nature. There was a Moler's Drips on the market just after the war. Sugars were very high then, and there was a white sugar sirup that used to bring something like a dollar a gallon in those days. The first thing we knew a white sirup came on the market that was beautiful in appearance, more beautiful than the Moler's Drips, and it was offered at a less price, and we commenced to take hold of it.

Mr. RICHARDSON. The prejudice in the minds of the public still exists against glucose, does it not?

Mr. MADDEN. Yes, sir.

Mr. RICHARDSON. Can not you give from your standpoint and your knowledge the reason for the prejudice? There must be some reason for that prejudice or it could not exist. Now, what is it; what is the matter?

Mr. MADDEN. When this first came on the market it was taken hold of by the trade under the impression that it was a sugar sirup, but at a lower price. But it developed in handling it that it had an acid taste sometimes, and it was not free from fermentation, and I think the wholesale trade became prejudiced, and I think through their salesmen they denounced it as an unsatisfactory article, and that the traveling salesmen and the merchants, during the several years that it took the glucose people to perfect the manufacture of the article, did their work so well in denouncing it that we can not undo it now without a great deal of effort.

Mr. RICHARDSON. Do you not think that the prejudice existing in the minds of the people may be accounted for in part by the fact that they have discovered that in the matter of sirup, as you have described, you put 25 portions of glucose in the sirup to 1 portion of real sirup? Would not that account for the prejudice?

Mr. MADDEN. No, sir. Because we can sell a merchant a sirup—I will make it stronger; I will say as high as 30 parts of glucose to 1 part of sugar sirup; just enough sugar sirup mixed with it to give it a slight amber color. They do not want it water white, because they know by the price they pay for it that it can not be made from sugar and it must be glucose. They want a sort of straw color, and it is usually sold under a name like Amber Drips, or Nectar Drips, or Fort Dearborn—there are a great many names.

Mr. COOMBS. Do you not think when the fact is known that it is made from corn that it will do away with the prejudice to a large extent?

Mr. MADDEN. It ought to. I would be very pleased to send to the committee a sample of glucose, if you would like to see it or examine it.

Mr. LOVERING. Do you not think that if the public was familiar with the methods of refining sugar they would be equally prejudiced against that?

Mr. MADDEN. I think so to a considerable extent. If they saw the negroes lie around on the sugar piles in New Orleans, as I have seen them, I think they would be prejudiced against sugar. I have seen negroes lying on piles of white sugar asleep.

Mr. RICHARDSON. Do you not think we would quit eating to a large extent if we knew the ingredients in all the different kinds of foods?

Mr. MADDEN. Yes, and I think the logical conclusion of the Hepburn bill will lead us eventually so far that every time we order hash

in a restaurant we will have to have a certificate giving the brand and ingredients, and whether it is healthful or not.

Mr. RICHARDSON. That man would leave his hash when he got it, I reckon.

Mr. MADDEN. I think so. I think there are a great many things in the kitchen that all of us would prefer not to know or see.

I started a moment ago, in speaking of this question of sirup, to tell you about a concern that undertook to sell a large amount of sugar sirup owing to its being cheaper than glucose. They advertised the sirup and they received orders the first week for 150 barrels. I have this upon the statement of Mr. Graeme Stewart, who is the head of the concern that did this. As I say, they received orders for 150 barrels the first week; and the following week 147 barrels were returned them, because they found it was too strong, too rank, and unpalatable, and they could not use it. That was pure sugar sirup, from the Henderson refinery of New Orleans, not a low-grade sirup, but a sirup of good quality. I want to say to you now that the highest grades of sugar refineries' sirups in the market will not sell as against the glucose sirup, if the glucose sirup is not sold under the glucose name. To get rid of this sirup he had to send it over to a mixing firm to mix it with glucose and ship it back to his customers, and then it gave entire satisfaction.

Mr. RICHARDSON. Right in that connection, along that line, about glycerin. Can you tell something about that? How is that made?

Mr. MADDEN. I don't know anything about it.

Mr. RICHARDSON. You do not know about that?

Mr. MADDEN. No, sir; we do not handle it except in a very limited way.

Mr. RICHARDSON. Do you use that in food of any kind?

Mr. MADDEN. No; we do not. We buy glycerin and put it up in small bottles for the convenience of the retailer, but we have no particular knowledge of that in any way.

Mr. RICHARDSON. What does the retailer do with it? Does he put it in food?

Mr. MADDEN. No; he sells it for family use; for chapped hands, and so on.

Mr. TOMPKINS. He sells it as glycerin?

Mr. MADDEN. Yes. That is the only way we handle it. Now, I would like to speak to you a moment in regard to maple sirup. This is a subject which will undoubtedly interest you all. You are in a very peculiar position regarding maple sirup. We do not believe it is right that a sirup composed of maple sirup made from either the sap of the maple tree or from maple sugar and mixed with glucose should be sold as a maple sirup; but we do believe that a maple sirup made from sirup of the maple sugar and mixed with cane-sugar sirup or refined sugar sirup, I will say—because beet and cane sugar are the same after they have been through boneblack—we do believe that should be sold for maple sirup, and I will tell you why. In the first place, the amount of sap of maple sirup—that is, sirup that is made from boiling the sap of the maple tree without converting it into sugar—is so limited that it would not in my judgment supply more than 5 per cent of the demand for maple sirup in the United States.

Now, when maple sap is boiled into sugar—and I want to say before I go further that the reason that the amount of sap sirup is so limited

is because it is hard to keep it from fermentation, and the season is so short in which the sap runs that it is difficult to manufacture, to boil enough in the camps to supply the demand. Consequently a large proportion of the sap in the States where maple sugar is made is boiled into maple sugar. Now, we have found by experience, not by chemical analysis, but by experience, that the maple sugar made from the sap of the maple tree in Ohio is not so strong as the maple sugar made from the sap of the maple tree in Vermont, and that the maple sugar made in Vermont is not so strong in flavor as that which is made in Canada, in Quebec Province, because it seems that the colder the climate the stronger in flavor the maple sap is.

Now, we buy these various sugars and reduce them to a liquor to make maple sirup, and I will give you my word, gentlemen, if we take a Canadian sugar, which is the highest-priced maple sugar we have, it being worth at the present time 12 cents a pound, while Vermont is worth only 8 cents a pound, I give you my word that if we make a liquor by melting that Canadian maple sugar, without the addition of sugar to reduce the strength of the flavor, it is so strong you could not use it.

Mr. COOMBS. What do you mean by strong?

Mr. MADDEN. Strong in flavor.

Mr. COOMBS. You mean it is positive?

Mr. MADDEN. The flavor is so positive: yes, sir.

Mr. COOMBS. And it is sweet?

Mr. MADDEN. Sweet, yes; but if you put it on a hot cake you would say right away, "Take it away, I won't have such stuff," and you would say ordinarily that it was glucose. You would be wrong, but that is what you would say.

Now, the Vermont sugar is not so strong and it does not require so much cane sugar to reduce that to a flavor comparing with the natural maple sirup obtained from the sap itself, and I tell you that we can take maple sugar and reduce it, blending it with cane sugar, and by that I mean take ordinary cut loaf sugar, for instance, and melt it, and we can take this sirup that is made by melting the maple sugar and blend it with the white sirup, and we can produce a maple sirup that is in flavor strong enough, and yet delicate enough to satisfy the appetite, and that, in my judgment, is better than the sap sirup made from the maple tree for a great majority of the people.

As an illustration, although we get \$11.50 per dozen gallons for a sap maple sirup that is boiled from the sap of the maple tree and the character of maple sirup that I have just described, about 95 per cent of our business is on the sirup that is made from the maple sugar and the cane sugar rather than on the sirup made from the sap itself. Now, if we have to take this maple sirup and brand it as cane sugar, or have any such restrictions, we can not sell it. Now, what are we going to do? We do not believe in frauds any more than you do. We think just as much of our reputation as you do of yours; but we do not want to be held responsible for conditions that we have not built up.

Mr. COOMBS. It seems to me your whole argument has illustrated that everybody who buys these things knows he is not buying the pure article.

Mr. RICHARDSON. It is either that or you are deceiving them, one or the other.

Mr. MADDEN. Well, I will answer another phase of that question.

Now, it is commonly assumed, I think, that these blends, mixtures, substitutes, and what some of our theoretical gentlemen call commercial frauds are done for the purpose of palming off on the people something that is cheap or inferior at a high price. Right there is where the mistake is made. The profits on that class of goods are less to us than on the higher-class and more expensive goods, because competition forces these lower-class commodities down to such an extent that they pay us less profit than any other.

We could not take a maple sirup and make it with cane sugar and obtain the price for pure maple sirup unless it had the quality, unless it cost so much. In other words, in speaking of maple sirup—and here is the part of this I forgot to speak of—if you take maple sugar and reduce it to the liquor, as we call it, and had to sell it without the addition of any reducing sugar or white sirup—not glucose, but pure cane or beet sugar—if you have to sell it without doing that, it would be so expensive as to be prohibitory, because with Canadian maple sugar worth 12 cents a pound to-day, it taking 8 pounds of it to make a gallon of sirup, you would have a price of nearly a dollar a gallon for your liquor as a first cost, without the cost of package.

Now, add the cost of labor, canning, and casing, and you add about 25 cents a gallon. That would be 96 and 25—about \$1.21 a gallon. We sell the best maple sirup we make by blending, as I have explained, for \$11.50 per dozen gallons. So we do not get the benefit of this "fraud" that you think we do.

These cheap jellies are another illustration that these low-priced goods, owing to competition, pay us the least profit. We would rather sell the higher class of goods, because they pay proportionately larger profits; but there is the public demand for medium-priced goods that are not unwholesome or deleterious to health, and we think the people have got a right to have them.

Mr. Chairman, I see that it is almost 12 o'clock, and I want to thank you, gentlemen, for your attention and consideration. I can not too earnestly request you to favor the Corliss bill, because I believe it is absolutely necessary for the business interests of the country. I think I have made myself clear along general lines, although, unfortunately, I am not an orator and I can not explain things as clearly to you as I would like to. The main point with us is that conditions exist that make it impossible for us to agree with the conditions required in the Hepburn bill. We believe that the commercial phase of the Hepburn bill is entirely separate and distinct in principle from that part of the bill which relates to pure-food legislation. We believe the amended Mann bill or the Corliss bill gives ample protection to the public from the sale of deleterious or unwholesome food, and we think that is as far as legislation should go.

The CHAIRMAN. Mr. Madden, have you any objection to discussing that part of the Brosius bill that treats of the standards that are to be created under it?

Mr. MADDEN. The Brosius bill?

The CHAIRMAN. Yes; give us your idea of that, if you please.

Mr. MADDEN. I object to standards, because, in the first place, I do not believe the Government should have or has any right to fix a standard. I do not see why—

The CHAIRMAN. Now, let me ask you, would you have any objection

to the Government, through competent chemists, after careful examination, fixing the standards of food simply as an advisory matter to the public?

Mr. MADDEN. To the public?

The CHAIRMAN (continuing). Without in any way requiring conformity on the part of manufacturers to those standards or without in any way punishing those that did not reach that standard in their manufacture, but simply as a matter of information, so that the public might know what a given food, pure in quality, should contain?

Mr. MADDEN. You mean for the Department of Agriculture, for instance, to publicly enlighten the people in regard to pure foods?

The CHAIRMAN. What should be, what is, a pure food.

Mr. MADDEN. I would not see the slightest objection to that; in fact, I would like the Department of Agriculture, or any other department of the National Government, to give the people all the education in that respect that they could possibly do.

The CHAIRMAN. Then, going a step farther, after establishing in their judgment standards—

Mr. MADDEN. No.

The CHAIRMAN (continuing). In regard to different articles, would there be an objection to their announcing that this or that or the other article made by A, B, or C did not reach that standard, so as to put the public on its guard as to what were pure foods and what were not?

Mr. MADDEN. I should say that would not be fair or just to the commercial world unless it was done to all classes of merchandise alike.

The CHAIRMAN. But under the supposition that the world can not be reformed in a day, and as a subject of this kind might not be made absolutely so comprehensive as to involve all articles, would it not be desirable to make a start?

Mr. MADDEN. I do not think in that direction; I think in the direction of enlightening the people on what is good food, and absolutely prohibiting the sale of food that is deleterious to health. I contend, then, as I repeated a while ago, that when an article is considered to be healthy, whether composed of one or more ingredients, that then it must take its rank in the commercial world the same as any other merchandise. In other words, I can not see any difference in the commercial world between selling a food product without being true to name than I can in selling tobacco, or furniture, or clothing, or a thousand and one things that we use and wear.

The CHAIRMAN. To illustrate my idea—I do not know whether you have understood exactly what I was trying to get at—Mr. Grosvenor a few days ago introduced a bill relating to woolens, requiring that there should be attached to all articles not composed entirely of wool a statement as to the quantity of adulterants, whatever it might be, cotton or shoddy, or silk, or anything of that kind. What objection would you have to that kind of legislation?

Mr. MADDEN. I think it would tend to affect our profits, for the reason that when standards are established it makes an article more staple. I think you understand what I mean by that. Take it in our business, any article that is identically the same and that is handled the same by every merchant—we will say Price's Baking Powder or Royal Baking Powder, or certain brands of soaps, those are all the same, whether handled by one wholesale house or another. Consequently competition becomes very sharp. The retailer, when he is

offered Kirk's soap from Sprague, Warner & Co. at 5 cents a box lower than he is offered it by Reid, Murdoch & Co., appreciates that immediately. Now, when you are selling articles in which the value depends more or less upon the judgment of the buyer, it does not become so staple and, consequently, there is more opportunity for profit; but I do not think, Mr. Chairman—based upon the returns of the wholesale grocery and manufacturing business for the past few years—that there need be any alarm as to the profits of the people in that class of business.

The CHAIRMAN. Your argument upon that simply means that the more ignorant your customers the larger may be your profits?

Mr. MADDEN. That is one way of putting it.

The CHAIRMAN. And that the more a man may be enlightened from any cause, or by any means, the more certain he is to protect himself from paying exorbitant or extravagant profits?

Mr. MADDEN. I would not take that view of it; no, sir. I think that on the same line—

The CHAIRMAN. Now, then, in the advocacy of the measure that you have suggested to us here, you are looking from the standpoint of the comparatively few men who are sellers, and are paying no attention or regard to the interests of the great multitude of men who are buyers, and your argument is based entirely on that thought, is it not?

Mr. MADDEN. No, sir; I contend that it is not. I contend that my argument does not lead to any such conclusion. I think I have shown clearly—

The CHAIRMAN. I thought your remarks with reference to staples led up to that conclusion.

Mr. MADDEN. I believe it is a fair statement, as a merchant, to say that no merchant is going to transact business year after year and month after month without he gets a fair return upon his investment.

The CHAIRMAN. Yet merchants do, nearly all of them, deal in staples, staples where there is knowledge, and a measure of knowledge that makes competition, as I understood you to say.

Mr. MADDEN. Yes; and I am going to answer that very point—

The CHAIRMAN. Then, following that knowledge, it has brought competition into trade; knowledge, I mean, on the part of the buyers.

Mr. MADDEN. Yes; I think it does to a certain extent.

The CHAIRMAN. Because you have said that it was knowledge that classified goods into staples or otherwise?

Mr. MADDEN. Yes; but we have to make, in order to continue in our business, as I said before, a fair return for our labors or investment or we would have to quit the business. Long custom has established a custom as powerful as any law that there is on the statute books of any State or government certain trade conditions. For instance, sugar is sold, I can assure you, by every wholesale grocer in the United States at an actual loss.

I do not mean to say that he does not get as much per pound for the sugar as he pays for it, but when you add the expense of doing business at that price he does not get as much as the total cost. That is true of other lines that become staple. Consequently, other articles must pay a higher profit. Now, if, under your theory, all are made staples, all of these goods will have to have a higher price all along the line, because we have got to have a return for our efforts and our capital or we will not continue in business; and while theoretically

you may lower the price on one item, you must bring it up on another, because it can not be successfully contended that we would do business without a fair return for our efforts.

The CHAIRMAN. No; but would you not do this: Would you not equalize profits, and make profits on all of your goods instead of selling some at a loss and then selling at an undue profit another article to a man who was ignorant as to what he was getting in the transaction?

Mr. MADDEN. I do not believe it would operate that way. If it would, we would not care; all we want is to do an honorable, straightforward, legitimate business and make a fair return on our money and labor invested. We do not care whether we make profits on sugar, rosin, peanuts, preserves, or what.

The CHAIRMAN. Another thing. In the illustration you have given, is it not a fact that you make no profit on your sugar because you have but one vendor to deal with, one seller?

Mr. MADDEN. No, sir. That same condition existed before we had a sugar trust. We did have an opportunity in that time. The only difference that exists, Mr. Chairman, is that prior to the concentration of sugars in the hands of practically one party we had an opportunity to speculate in sugars, to use our judgment; but when that was controlled by one man that opportunity, as you will naturally see, was taken away from us. With the exception of that condition our profits in sugar have been about the same.

The CHAIRMAN. Our hour for adjournment has arrived.

Mr. MANN. You had something written there.

Mr. MADDEN. I have not finished all I intended to say.

The CHAIRMAN. Do not understand that we are trying to cut you off, because you can have time another day.

Mr. MANN. The committee have been very much interested in what you have told us.

Mr. MADDEN. I have tried to be very frank and candid and have not taken a selfish standpoint.

Mr. MANN. If you have anything written there, we would be glad if you would leave it with the stenographer.

Mr. MADDEN. We have some State rulings here, and I want to say that I am going away this afternoon and will not have an opportunity to say anything more. Therefore I would like to add one word, if you will pardon me, and that is in regard to State rulings.

In our judgment, if the Hepburn bill should become a law, you have delegated under that bill power for a commissioner or commissions, or whatever there is to run it, to enact rulings without limit which will, in effect, be the same as laws to manufacturers and dealers, whether or not it is legal under the act, for the reason that with such vast interests under the control of one man or one commission no manufacturer or merchant could afford to go against that interest. We find to-day, in the different States where rulings are made, rulings that are so absurd, so atrocious in the face of the law, that we would not question our ability to beat them in the courts, but we dare not go in and contest them. Why? With 12,000 items in our stock, with 15 or 20 traveling men in that State, probably, canvassing every town and city, Mr. Commissioner has too much of interest under his control for us to oppose him, and we have to submit to unjust fines of our customers, and pay them, and say "Thank you," and we believe that

is very, very bad legislation, and we believe that would be the result of this sort of a bill.

The CHAIRMAN. Do you not believe that when such a commission as is constituted by the Brosius bill is appointed there would be uniformity, and instead of having 37 different tribunals passing upon these questions that there would be but one tribunal, and instead of having the annoyance that comes to you from State commissioners, often inferior men because of inferior salary, in part, that you would have a much wiser administration and have but one, because the State undoubtedly would fall into this system, or else their administration would practically come into disuse?

Mr. MADDEN. Mr. Chairman, I am so much in favor of the idea you have just advanced that I must say to you that that is our principal object in coming to Washington, except that I wish to substitute the amended Mann bill or Corliss bill for the Brosius bill. If the action of the National Government did not have any effect on the original packages in interstate commerce and would not have any influence upon State legislation we would not care for it, because it would not be of enough significance for us to spend our time over; but we do believe, and that is the very vital question with us, that national legislation will affect State legislation, and that by getting a bill here upon fair and reasonable lines it will aid us very materially to secure universal legislation in the various States, and that is what we devotedly wish for.

I thank you, gentlemen, for your courtesy.

The CHAIRMAN. I take the liberty in the name of the committee to thank you for your assistance to us.

Thereupon, at 12.15 p. m., the committee took a recess until Monday, March 17, 1902, at 10.30 o'clock, a. m.

ADDITIONAL STATEMENT SUBMITTED IN FAVOR OF MANN BILL BY MR. MADDEN.

1. It is the only bill that is solely a pure-food bill, the sole aim of which is the protection of people from deleterious or unhealthful food.

2. Its strength is in its simplicity and freedom from technical complications, yet being so strong and comprehensive as to cover all adulterations of food.

3. In our judgment all of the other bills before Congress will have the effect of regulating the business of manufacturers and dealers and commerce between individuals rather than interstate commerce, and it seems to be as much their object to do this as to protect the people from adulterated food.

To this commercial feature we strenuously object, as we believe it is class legislation, for if the Government intends to compel manufacturers to expose their formulas and method of manufacturing food, why not the same application be made to all other articles of merchandise, such as textile fabrics, cigars, boots and shoes, etc.

We claim that if an article of itself is admitted to be healthful that by no method of reasoning can it be logically construed that to compel the exposition of the formula or point of production, to be printed

upon the label of such article, is, in any way whatsoever, connected with pure-food legislation. In other words, when an article, whether it be composed of one or more ingredients, each of which, and collectively, are admitted to be pure and wholesome and entirely healthful for pure-food purposes, in our judgment any additional restrictions compelling exposition of formulas, place of production, branding, or labeling becomes an entirely different class of legislation, because such restrictions can only have for their object the regulation and control of the profits of private business enterprise. If Congress desires to pass a law to regulate all classes of merchandise upon this theory, it would appear to our minds to be an entirely separate and distinct question from pure-food legislation.

MONDAY, March 17, 1902.

The committee met at 10.30 o'clock a. m.

STATEMENT OF MR. ALBERT KAISER, OF NO. 14 SOUTH TENTH STREET, PHILADELPHIA, PA., PRESIDENT OF THE RETAIL MERCHANTS' ASSOCIATION OF PENNSYLVANIA AND PRESIDENT OF THE PHILADELPHIA RETAIL GROCERS' ASSOCIATION.

Mr. KAISER. Mr. Chairman and gentlemen, I will briefly present the desires for food legislation as I have them expressed by the retail grocers of Pennsylvania, whom I represent, the Retail Merchants Association of Pennsylvania and the Philadelphia Retail Grocers Association; and I desire to emphasize at this point that, as organizations, we have for a number of years been lending our best efforts for effective food legislation. We believe that effective food laws are such as are alike fair to the manufacturer, seller, and consumer; such as will tend to elevate the standard of quality of food products without depriving any class of consumers of anything that is harmless; such as will tend to promote honest commercial methods, and should contain a clear definition of adulteration, compounds, and so forth, as amenable to the act, in order to reduce to a minimum the practice of making decisions or rulings.

Under an effective food law the consumer would reap the greater benefit. We are told that the price at which an article is sold is a guide to the consumer, by which the consumers may know what they are purchasing. This would be in a measure true if all the qualities were to be had or seen in every store, but we find that the class of merchandise in a store is governed by the purchasing powers of the patrons of that store. Thus in the localities inhabited by the poorer class of people you are not apt to find stores that are offering high-class products; and the patrons of such stores, believing the representation implied by the name of the product, expect at their price as much as do the wealthier class, who have come to know a better article, expect to find at their price. This is illustrated by the fact that we undoubtedly know people who have paid different prices for different goods, and they have both been certain that they have bought the best, which is not true, as the wide margin of difference in price should show.

I do not believe that many articles of food contain harmful ingredients in sufficient quantities to be deleterious, but I do believe that

many articles of food are needlessly adulterated and many substitutes practiced, which amounts to imposition, and such substitutes would not find any sale if the truth were known to the consumers.

If I, as a merchant, offer a consumer a pound of currant jelly at 5 cents per pound, I have no right to tender cranberry jelly under the name of currant jelly, even if it be just as wholesome and more expensive. Neither have I a right to tender him a mixture of apple skins and cores, and so forth, without a vestige of the fruit in it, under the specific name of a fruit jelly; and I will say now that a large majority, probably 75 per cent, of the retail merchants do not know that there are such goods on the market that are not even flavored, and depend entirely on the sale by the label, because the goods are not so represented by the manufacturer or jobber.

Therefore I contend that the interests of the consuming public are best served by a true label. Under the proposed Corliss bill the interests of the consuming public would be served in a slight degree, as the amount of food products which contain harmful ingredients in sufficient quantities to be deleterious is very small, they being amenable, while articles of a spurious nature or a deceiving character would practically bear the stamp of Government approval, as they would be in compliance with the United States food law, inasmuch as they are not amenable.

Take, for instance, olive oil, which is put up in various standards of quality, so much so that there are thousands of consumers in this country to-day who believe confidently that it is impossible to buy pure olive oil, which is not true, of course, but they have no means of telling; and I am told upon the authority of Mrs. S. Tyson Rorer, the culinary expert of national repute, that a mixture of olive oil and sunflower-seed oil is almost undetectable, and much so mixed oil sold as pure olive oil. So that olive oil of various grades, under the same label, is bound to be misleading and unfair to the consumer and to the manufacturer of the pure article and the packer of the pure article.

In the matter of preservatives, which seem to run afoul of the food laws more than any other matter, it may be necessary to use salycilic acid or some other preservative in canned foods, or benzoate of soda in that ever-ready-to-ferment product known as catsup, so they may be placed upon the table in a pleasing and palatable condition; and I do not believe that a label making known this fact would scare the consumer nor curtail the sale. But where the manufacturer can accomplish this without the use of a preservative, the consumer should have the opportunity of knowing it and buying those goods without the preservative.

Under a recent ruling of the Pennsylvania food department benzoate of soda is used very largely as a preservative, and in mince-meat and other goods, and a certain manufacturer who deals quite largely in those goods made the statement that if this ruling were to stand they would not put up any more mince-meat until it was rescinded; that they could not pack it. At the late food show of the Philadelphia Grocers' Association, this mince-meat was exhibited alongside of that of another manufacturer, who contended that his mince-meat was absolutely without any preservative, and he offered a reward to anyone who would prove that there was a preservative in it. Now, we believe that the consumer should know whether the preservative is in there or not, so that he may take his choice.

We do not deem it necessary to eat formaldehyde in our sirup. That is a preservative that is used and practiced to some extent, which we consider entirely unnecessary, and we believe absolutely that if a jar of sirup, either corn or sugar, were labeled preserved with formaldehyde it would not be sold, and people would not use it, and we think rightfully so.

The advantages that the retail merchants would secure from an effective food law are the elimination of an unfair competition, which is fostered by misrepresentations, untrue branding, and the ignorance of the consumer. A true label would fully account for the difference in cost of articles which are presumably, to the public, of the same quality.

For instance, take California canned fruits. California canned fruits are put up, as a rule, under four grades: Extras, which are a very heavy sirup—probably a little heavier than the other; then the extra standards, almost the same fruit—probably the same fruit, but I think a little smaller cans; then the standards, a little lighter sirup, and then the seconds, in which there is no selection of fruit and practically a very light sirup. Until very recently I myself never knew that there is a better grade of California peaches than the extra standard. It was always represented to us that those were the very best goods—that is, that came from this particular factory—until here lately I came in contact with the broker who represented the factory direct.

Now, a firm will take the standards and advertise them as being the very best California peaches. Persons who have bought those peaches and have never bought the better grades will always believe that they are the best. They are their standard fruit, because they know no others.

The CHAIRMAN. Would you tell us the kind of sirup these peaches are put up in?

Mr. KAISER. I do not know exactly, but I think the extras are put up in a sugar sirup, and the others, I think, are mixed with glucose. I will not say that positively.

Mr. COOMBS. Do you mean to say that those mixed with the sugar sirup are better than those mixed with the glucose by reason of that fact?

Mr. KAISER. Undoubtedly so.

Mr. COOMBS. And do you hold that there is a difference between the glucose and the sugar; that is, the sugar has an excellence that the glucose can not attain?

Mr. KAISER. I undoubtedly do; yes, sir.

Mr. MANN. Tell us how you would remedy that so as to guarantee to the purchasers that he would not buy an inferior article when the merchant told him that that was the best California fruit, when he was selling him a certain grade. Would you require the manufacturer or the department of pure food to mark upon the label "This is first class, second class, third class, fourth class, fifth class, of California fruit?"

Mr. KAISER. I will answer that in this way, taking California peaches for example, that the quality of California fruits is based mostly on the quality of the sirup; and I would say that the labels should be regulated in a certain way, that it should say that this was a certain per cent sugar sirup, and so on.

Mr. MANN. A purchaser would not know anything by that.

Mr. KAISER. We think he would.

Mr. MANN. But I am a purchaser; you are not. I would not know anything from that. What would I know, what would any member of this committee know, if they should put a label on that that it was such and such a percentage? If the two cans were side by side, it might be possible to tell, but you do not suppose that the ordinary purchaser would know anything from the statement of the percentage of the sirup?

Mr. KAISER. If it was a certain percentage of sirup, a small percentage of glucose, or a certain percentage of glucose, and so on—

Mr. MANN. But your claim was that you did not know for a long time that they had any better California fruit than what you had been buying. There ought to be some way of letting you know whether it was the best or not.

Mr. KAISER. I believe that by the label we can determine that. That is my idea.

Mr. MANN. How can you put it upon a label so that anyone can tell from the label whether that is the best California canned fruit, or the poorer?

Mr. KAISER. I do not think we should put it that way.

Mr. MANN. Is there any other way? I am asking you—and you have given it considerable study—is there any way in which it can be done?

Mr. KAISER. It can be, by placing it on the can, for instance, where glucose is used—putting it on the can that such and such a percentage is glucose.

Mr. TOMPKINS. You would say: "This is glucose?"

Mr. KAISER. Yes, sir.

Mr. MANN. And you do not think glucose is a pure sirup and just as good as sugar?

Mr. KAISER. No, sir. As I was going to say at the close of my remarks, the reason that people are opposed to glucose is that it was first discovered and used as a substitute for sugar, and wherever it is used now people believe that it is substituted for the purpose of cheapening the article. In the case of sirups it is not for the purpose of cheapening the article, for it increases the cost of it and also makes a more ready sale. I have never tried it, but I do not believe that labeling an article with a certain portion of glucose in it would stop its sale for a minute.

Mr. MANN. To return to the peach question for a moment, I want to find out if there is any way of doing this. You say they select the peaches for some cans?

Mr. KAISER. Yes, sir.

Mr. MANN. And they do not use selected peaches for the other cans?

Mr. KAISER. You say "selected" fruit. I used that word—

Mr. MANN. You said they selected the fruit. I suppose that is what they do. How are you going to tell? What method, in your judgment and consideration, is there by which the purchaser can be protected, and may know, for instance, that the peach that he is getting is not a wormy peach and a defective peach, but was a perfect peach when it was put in the can?

Mr. KAISER. A wormy and defective peach would be a second—would be marked a second.

Mr. MANN. How can you tell whether it is a second or not?

Mr. KAISER. I presume a proper label would call for it, because that is their name.

Mr. MANN. Is there any way of requiring the man who cans the peaches to mark them properly? Is there any way of detecting whether a peach is defective or not?

Mr. KAISER. I presume that if we had a law on the subject, and we opened the can and found that the peaches were bad, we would have a way of getting at that man who canned them.

Mr. MANN. Can you tell by an examination of the can?

Mr. KAISER. No, sir.

Mr. MANN. By an examination of the fruit—the peaches—could you tell?

Mr. KAISER. By the fruit we can.

Mr. MANN. How would an examination of the fruit disclose that fact?

Mr. KAISER. The condition of the peach would disclose the fact.

Mr. MANN. How?

Mr. KAISER. For instance, by the presence of a wormhole; or you could tell by the way that a peach had been trimmed and cut—the overripe parts cut away from it.

Mr. COOMBS. Your idea is, generally speaking, that the difference in grades—the thing that establishes the grades—is the preparation of the peaches?

Mr. KAISER. Yes, sir.

Mr. COOMBS. Not the peaches themselves?

Mr. KAISER. Barring seconds.

Mr. COOMBS. Barring seconds?

Mr. KAISER. With seconds, of course, the difference is in the fruit itself as well as the sirup, but it is those differences chiefly, the sirup and the preparation of the fruit, that makes the grade. That, of course, is referring to peaches, which I have used as an illustration. Of course other articles would not be precisely on the same basis.

Mr. COOMBS. Do you know anything about the law in California with reference to the preparation of the peaches?

Mr. KAISER. If I understand correctly, there is a law in California which requires the specific gravity of the sirup to come up to a certain degree; just what it is I do not know. For instance, a certain degree of gravity of sirup would be marked an extra, and there is a certain standard, or extra standard, and there is a certain standard of sirup for the grade of standards.

Mr. COOMBS. Do you not know that the canneries in California in purchasing from the farmers require a certain size of the fruit, and that they reject all peaches falling under that size?

Mr. KAISER. The fact is that I know that they will usually pack the peaches to the size that we want; that is, the number of halves to the can—12, 14, or 16 halves to the can.

Mr. MANN. We all know what the California canned fruits are. Don't you think that for the protection of the consumer the Government ought to lay down the standards for the size of the peaches and a standard for the sirups, so that anyone who purchases a can of peaches may know what he is buying himself?

Mr. KAISER. I don't know whether the Government could do that specifically. As I understand the Hepburn bill, it provides for that thing.

Mr. MANN. Make one grade for California canned peaches, so that

anyone who bought a can of California canned peaches would know that he would get the same quality to-morrow that he had bought yesterday, or the same quality next week.

Mr. COOMBS. You mean California peaches of one grade?

Mr. KAISER. I hardly think that would be possible, because it is not everybody that is able to buy the high-priced California fruits.

Mr. MANN. Would not it be deceiving in buying the lower classes?

Mr. KAISER. Not if they knew they were the lower ones.

Mr. MANN. But how could you—

Mr. KAISER. Of course you could use the terms first; second, and third.

Mr. MANN. You mean mark the lower ones as second, third, and fourth class goods?

Mr. KAISER. Yes, sir.

Mr. MANN. Do you think they would be salable that way—the lower classes?

Mr. KAISER. Yes, sir.

Mr. COOMBS. I think the fourth-class goods would sell.

Mr. KAISER. Another benefit to the retailer is the placing of the responsibility where it belongs, namely upon the packer, who knows the quality of the goods he packs, and we feel that a true label would practically accomplish that.

Still another advantage to the retailer would be the retailer's guaranty, or the invoice guaranty, if you like, or any way that it might be determined by the Department, which makes the grocer of easy mind, only requiring him to give proper care and attention to his business.

Mr. MANN. Now, upon that point, the gentlemen who were here last week amplified a good deal on the impossibility of doing this. I judge from what you say that you think it would be quite practicable?

Mr. KAISER. I do not question it for one moment, for this reason, that under the administration of the Pennsylvania food laws by Maj. Levi Wells—while the law did not call for it—we called upon him from the Philadelphia Retail Grocers' Association and asked him where a retail dealer had gotten into trouble, and had such a guaranty, whether he would not go for the manufacturer and exempt the retailer. He agreed to do so, and did so wherever the manufacturer was of the State.

Mr. MANN. Tell us how that was done.

Mr. KAISER. That was done in this way, that if a customer came in our store and picked up an article and we showed him a guaranty stating that the article was all right and it was found that it was not all right they would go to this place and purchase the same class of goods—

Mr. MANN. What I wanted to get at was the possibility for giving the guaranty. That was stated here to be an impossible thing as a matter of practical working. How did they do it?

Mr. KAISER. I do not know where the impossibility would come in. We did it in three ways. In the first place, the individual grocer exacted of everybody that he bought goods of, that he felt came under the food laws, a guaranty that those goods should comply with the food laws of Pennsylvania.

Mr. MANN. In what form was the guaranty?

Mr. KAISER. It was just simply a written guaranty that these goods, purchased on such and such a day and bearing the name so and

so, were guaranteed to comply with the food laws of Pennsylvania, and the name of the firm selling was signed underneath.

Mr. MANN. Do you mean where you buy an invoice of, say, a dozen or forty varieties of groceries, that there would be just one guaranty in the invoice guaranteeing the purity of the goods?

Mr. KAISER. It would name all the goods that were in that invoice.

Mr. MANN. It would name all the goods on the invoice?

Mr. KAISER. Yes, sir.

Mr. MANN. And would not specify the particular goods?

Mr. KAISER. I did say, or I thought I said, it specified the particular goods.

Mr. MANN. Then the guaranty would name three or four dozen cans of canned corn, for instance; is that what the guaranty would say?

Mr. KAISER. It would say so many cases of canned corn, of course.

Mr. MANN. That would be the method of proceeding?

Mr. KAISER. Yes, sir. Now, there is another method that we have worked through the organization—

Mr. MANN. Pardon me a moment; as to the matter of practical operation, did you find that every time you telephoned the wholesale house—do you telephone for goods or purchase orders from solicitors who come to your stores?

Mr. KAISER. Yes, sir.

Mr. MANN. Now, whenever you got one of those orders filled, there would always be a guaranty with it?

Mr. KAISER. I will say this, that whenever we bought duplicated orders of the same goods, we did not ask for a guaranty.

Mr. MANN. But whoever had charge of the pure-food laws in Pennsylvania would not prosecute you?

Mr. KAISER. Would not, as long as we could prove that the goods were all right, and it could be put through. If we failed to prove it, of course it would come back to us.

Mr. MANN. Of course that was simply a matter of arrangement between you?

Mr. KAISER. Simply a matter of arrangement.

Mr. MANN. Your idea was to take a guaranty in the first place of the quality of the goods?

Mr. KAISER. Yes, sir.

Mr. MANN. Was it possible, would it be possible, to have such a guaranty as that every time you ordered any quantity, no matter how small, for instance, of groceries? How many orders do you give each day?

Mr. KAISER. I suppose seven or eight orders a day—say five orders a day.

Mr. MANN. Not more than seven or eight orders a day?

Mr. KAISER. No, sir.

Mr. MANN. Through the telephone or otherwise?

Mr. KAISER. No, sir; we are not compelled to buy so very often, and we would not average over five orders a day.

Mr. MANN. I should say that the average grocery of Chicago would average fifty times a day.

Mr. KAISER. We do not see the necessity for it. For instance, we buy sugar on one day that will last us all week; we buy coffees enough to last us for a month, and of canned goods we buy enough at one time to last us an entire season.

Mr. MANN. Of course I know nothing about the necessities, but I know what the wholesalers and retailers tell me. Now, would it be practicable, in your judgment, to have a guaranty go with each one of these orders when it is filled?

Mr. KAISER. I believe it would, although I believe if such a law were in operation it would evolve itself into this, that the manufacturers would issue guaranties on certain brands of goods as they were and would put up standing guaranties.

Mr. MANN. That would not be sufficient under the terms of this bill; that might be changed.

Mr. KAISER. I think it would.

Mr. COOMBS. You are not a lawyer?

Mr. KAISER. No, sir.

Mr. COOMBS. You have never studied the relations between the guarantee and the guarantor in the different States?

Mr. KAISER. No, sir.

Mr. COOMBS. Then the laws might be different in the different States?

Mr. KAISER. Yes, sir; that might be true.

Mr. COOMBS. In the proceedings of the Federal court the laws of the State would be observed. Now, if you have one law in Pennsylvania and Michigan has another law, you take the manufacturer and he sends to you and guarantees a compliance with your law?

Mr. KAISER. Yes, sir.

Mr. COOMBS. And he sends to some other State a proposition, and the guaranty which he gives you would be insufficient in that State, and so on with reference to the various States. Now, is it not possible that the general terms of the guaranty which he would want to give would not apply in the different States—in all the States—and would not there be some difficulty about that?

Mr. KAISER. Well, I dare say it would be possible.

Mr. COOMBS. Is it not impracticable on that account?

Mr. KAISER. But our interest in this law is this, that we believe that the State laws will conform themselves absolutely to the national law, and not only that, but it will make all the State laws uniform.

Mr. COOMBS. Your idea is that the States would come in and change their laws so as to conform to the requirements of the national law?

Mr. KAISER. Yes, sir.

Mr. COOMBS. And, as I understand, the national law is not so much a law of detailed regulation, but you are leaving that to the States themselves?

Mr. KAISER. That is my interpretation of the Hepburn bill, which, of course, we are in favor of.

Mr. COOMBS. Yes; you are in favor of that.

Mr. KAISER. And it seems to me sufficiently in detail for any State.

Mr. ADAMSON. Instead of having the General Government pass legislation of this sort, why is it not better to have placed upon each article a statement, not that it is deleterious or unwholesome, but giving exactly what the contents are, and let that be the guaranty?

Mr. KAISER. That is practically the same thing.

Mr. ADAMSON. It ought to be absolutely that if you want to have anything practical in it.

Mr. KAISER. Of course; I am just taking the Hepburn Act—our view of it as it stands now.

Mr. ADAMSON. There is no use putting a conclusion on the package

as a guarantee, but let the label state what the contents of that package are, and it can be very briefly done, and that is a guarantee that you can catch up with a man on. If you want to have a package analyzed anywhere at any time, you can do it. I have seen labels put that way on numerous articles.

Mr. KAISER. I have seen the same thing. Only recently we had in our hands some jelly packed, not for our State, but for some other State, which was labeled with its contents—a certain quantity of fruit and a certain percentage of glucose and of sugar and just enough gelatin to prevent fermentation. I saw no trouble in selling those goods, and I guess it was a true statement.

Mr. ADAMSON. I am opposed to all this legislation, and if you are going to have any practical legislation it seems to me you ought to go to the bottom of it and simply have placed upon these packages a statement of their analysis, a statement of their contents—the elements in them.

Mr. MANN. The chemical quantities?

Mr. ADAMSON. No, sir; the elements. State that this is composed, for instance, of four articles in the following proportions, and put that right on the package, and then people can find out what they are getting, or if they do not understand the terms, they can look in a book or ask somebody who does know what it means.

Mr. KAISER. I was going to state further in regard to the guaranty in our State. Our association has in a number of instances asked the manufacturers for a bond of indemnity, and we have four or five on file of \$1,000 each, which guarantee us against any trouble we may get into for violation of the food laws. Our organization, besides that, is a purchasing organization and purchases and distributes goods to its members. On every article bought through, or rather bought by, them there is the same contract made—that duplicate order slip—and there is a contract that the articles on this order are guaranteed to comply with the food laws of Pennsylvania, and of course their taking that order and signing it practically gives guaranty.

Mr. MANN. But the Hepburn bill provides that the retailer must be able to produce a written guaranty of purity signed by the manufacturer?

Mr. KAISER. Yes, sir.

Mr. MANN. Or the wholesaler or jobber, the merchant from whom he bought the goods.

Mr. KAISER. Well, I presume that if such had been the law in Pennsylvania we would have had to make our arrangements in compliance with that. Ours was simply an arrangement with the department.

Mr. ADAMSON. In order to make that effective it must be from a responsible jobber or manufacturer.

Mr. MANN. In order to make it effectual would it be necessary to have a written guaranty for every article you would buy, with every invoice?

Mr. KAISER. I think so. I may be mistaken. That may be too elaborate for me.

Mr. ADAMSON. Printed stuff is very cheap.

Mr. MANN. This does not say a printed but a written guaranty.

Mr. ADAMSON. It does not say so—

Mr. KAISER. If the signature were written and the form were printed, it would be all right.

Mr. MANN. I presume it would be all right if the whole thing were printed; and if it was, would not the result be that these would be printed in each case and would go with the goods to every purchaser as a matter of course?

Mr. KAISER. I think so. I was going to speak of a spice manufacturer in Pennsylvania who has a printed guaranty right on the back of the box to the effect that the contents of the box are guaranteed to be in compliance with the food laws of Pennsylvania.

Mr. MANN. That would not be sufficient under this bill.

Mr. KAISER. No, sir; but something similar. If there was a printed form put inside the package—

Mr. MANN. Would it not become merely a matter of form?

Mr. KAISER. I do not think so.

Mr. MANN. So that whenever a retailer purchased goods he would receive a form that would guarantee the quality of the goods and that would come to him just as regulary as the bill did?

Mr. KAISER. I do not think so. There would not be much attention paid to the guaranty, possibly, any more than filing it away, until trouble arose, and then of course you would have some recourse.

Mr. MANN. What I wanted to get at is whether it is a practical proposition. Of course it would be largely a matter of form, because there would be so many guaranties required, and if it became a custom to have a guaranty on all the goods sold, and otherwise there would not be the form, and then it would become simply a matter of form, and in the end you would have to prosecute the wholesaler or jobber or manufacturer.

Mr. KAISER. Yes, sir; that is right.

Mr. MANN. Then why not proceed against them in the first place?

Mr. KAISER. We would have no objections.

Mr. MANN. Why go all through this form of having all that work done?

Mr. KAISER. The retailer of course sells a good many goods under his own label, and in taking goods from a factory and placing our labels on them we practically assume the responsibility of a manufacturer on those goods.

Mr. MANN. Not under this provision.

Mr. KAISER. I think I would, as the law stands now.

Mr. MANN. Do you mean that you would guarantee it if you sold it by the pint or the quart; could you guarantee anything sold in that way?

Mr. KAISER. Yes, sir; I think we could.

Mr. MANN. And put your guaranty on each one?

Mr. KAISER. Of course the law in Pennsylvania requires a barrel to be marked, and marked plainly, and we can not cover that up.

Mr. MANN. You have heard that the marking of oleomargarine does not hinder it at all from being sold. How would it be with a quart of sirup or vinegar or a pound of preserves, so long as it is not put up in the original package?

Mr. KAISER. I would prefer that law. There are some State laws that require it now.

Mr. MANN. How would you mark it; how would you mark a quart of vinegar or a pint of sirup?

Mr. KAISER. You take, for instance, lard. We put a label on top of the lard and we wrap it up, and the same way with butter, and a

bottle of vinegar or sirup we would stick the label on it. I will admit that it would be a little more trouble to the retailer if such a system was carried out, but we believe that it would redound to our benefit.

Mr. RICHARDSON. Tell me about the ordinary vinegar. How many ingredients of a wholesome character are there that enter into the ordinary vinegar that you would have to have marked on one of these labels?

Mr. KAISER. That is hard to answer.

Mr. RICHARDSON. From your experience?

Mr. KAISER. We are taught that the cider vinegar is absolutely pure cider juice. Others tell us that it is the juice of cider mixed with rain water. That may or may not be true—

Mr. RICHARDSON. What I am getting at is, if you sell a pint of it you would have to put on the label the gross sum of what the barrel is labeled?

Mr. KAISER. Yes, sir; we would have a printed label.

Mr. TOMPKINS. How would you use that label on a pitcher which some little girl had carried around from home for the vinegar and it was served out from the barrel into this pitcher; how would you mark that?

Mr. KAISER. With a label or tag. Of course we would rely entirely upon what the department which is going to execute this law would require.

Mr. MANN. Suppose this bill were made to apply to all kinds of drinks; how would you label it in the rush can?

Mr. KAISER. It would probably be doing a multitude of good then.

Mr. TOMPKINS. Would not putting the brand on the barrel be sufficient protection to you; putting a label on the barrel of vinegar, would not that be sufficient?

Mr. KAISER. Yes, sir.

Mr. ADAMSON. And then telling the little girl, for instance, that you have complied with the law of Pennsylvania?

Mr. KAISER. That is practically the way of the law to-day. A person comes in and asks for a quart of cider vinegar, and if we give them a quart of distilled vinegar we are liable to be prosecuted, and persons have been prosecuted on that line. One little instance: An inspector had gone into a store and asked for a quart of New Orleans molasses, and the clerk drew it and the inspector asked particularly whether it was absolutely pure New Orleans molasses, and the clerk said that it was, and on examination it proved not to be, and he brought a prosecution. It was adulterated, and the price was such that you would never suspect it.

Mr. ADAMSON. Of course the clerk thought the inspector was a customer?

Mr. KAISER. Yes, sir.

Mr. ADAMSON. An ordinary customer would not be able to detect that at all?

Mr. KAISER. No, sir.

Mr. ADAMSON. You have that kind of a law in Pennsylvania. Do you keep pure molasses?

Mr. KAISER. No, sir, we do not; we have not any pure molasses in our store. I will tell you frankly that we have not.

Mr. ADAMSON. Does the law require that you should sell—

Mr. KAISER. We invariably, when people ask for goods in our store—and I think you will find it so with every member of our organization—explain what we are selling, and when a person asks for sirup we always say it is compound sirup, and if they ask for New Orleans sirup we say that it is refined New Orleans.

Mr. ADAMSON. Is it pure New Orleans sirup?

Mr. KAISER. It is not pure New Orleans.

Mr. ADAMSON. Is it pure New Orleans mixed?

Mr. KAISER. Yes, sir.

Mr. ADAMSON. So that you do not tell, then, the exact truth about that?

Mr. KAISER. No, sir, I should say that—

Mr. ADAMSON. I am only asking you for information generally.

Mr. KAISER. I do not know what is in it.

Mr. MANN. I have no idea but that you are not an honest gentleman and run an honest store. I do not mean to reflect on you at all. What we want to know is whether it is practicable to do these things. You keep pure vinegar, do you?

Mr. KAISER. Yes, sir. We keep cider vinegar, which is supposed to be of the legal strength and acidity—40 to 45 grams which is the standard in our State—and distilled white vinegar; but of course in our State there is a great deal of distilled vinegar which is colored, and the law allows it to be sold under its true name.

Mr. MANN. If they state what it is?

Mr. KAISER. Yes, sir.

Mr. MANN. Do you think that anybody who ever buys it asks what it is?

Mr. KAISER. I think so.

Mr. MANN. How often? What percentage of persons would buy cider vinegar in preference to distilled vinegar if they are told it is cider vinegar instead of nobody knows what?

Mr. KAISER. I believe the most of the stores will explain the difference, because the tendency is to sell the cider vinegar, and the preference for the distilled vinegar is that it appears stronger—that is, it appears stronger in acidity.

Mr. MANN. I suppose that none of them guarantee the purity of the mother in it?

Mr. KAISER. Not to my knowledge. Now, our views, from the point of the manufacturer, are these: As to the advantage of the manufacturer, the advantages to the manufacturer accruing from such a food law.

The departure from the purity or standard of quality we believe originates with the manufacturer, and in most cases started with no other intent than that of self-defense, made necessary by the keen and often unscrupulous competition. For instance, a manufacturer, after considerable research and expended energy, places an article of high merit and possibly of absolute purity upon the market and by dint of hard work and costly advertising, backed by a good article, obtains control of the market for that article. Another manufacturer observing this success wants to share it. He makes an equally good article, but finds that he can not market it with paying success and adopts the usually first method that suggests itself and cuts the price, but to do this he finds that he must cut the quality, and he does so. The first manufacturer soon learns of this move, and either cuts the quality and

price of his article or makes a new one of a standard below that of the competitor and places it upon the market under another and possibly an assumed name. And so the process of deterioration of quality goes on.

But the branding does not change; it changes very little. Now, under an effective food law we do not believe that such a condition would be as likely to occur, and as all the makers would be under the same conditions, merit and ability would be more apt to count.

Another advantage would be that a considerable proportion of the consumption of the lower grades of food products would revert to the better grades, which are the most profitable to the manufacturer.

Mr. MANN. Your theory is, as I understand it, that every package of goods ought to be marked, so that in going into a store to buy, every customer will know what he is getting. Then if he goes into a store and buys apparently the same quality of goods, he knows that he is getting absolutely the same thing.

Mr. KAISER. Yes, sir.

Mr. MANN. Or believes that he is?

Mr. KAISER. Yes, sir.

Mr. MANN. That takes away all premium upon honest dealing. You may run a store as an honest merchant. Some rascal may set up a store next to you, and you would get no premium by reason of being an honest merchant.

Mr. KAISER. No, sir; we believe this law would put premium upon honest methods.

Mr. MANN. Does not that result in giving the rascally manufacturer under this clause an opportunity to manufacture goods under the name of John Smith this week, and give a guaranty on them, and put in poor goods, and then the next week manufacture other goods under the name of John Jones and give a guaranty on them, and then the next week under some other name and give a guaranty, and sell all the goods out at a much reduced rate at wholesale and then get away? There is no possibility of catching the manufacturer who let the rascally retail dealers sell these goods.

Then, if you protect yourself by abandoning your original labels, and adopting theirs, it seems to me there is nothing to put a premium on there at all.

Mr. KAISER. I do not think it is necessary to pay a premium for merit for the reason that I believe competition regulates the cost of goods and the selling price of goods.

If we have goods labeled in our own store with a certain label and a certain brand that bring 10 cents a package and our neighbor has precisely the same goods selling for 8 cents a package, they will soon have our price down to 8 cents. Now, the point that I have been trying to make on the label was this: That if we had, for instance, a bottle of olive oil that is absolutely pure, a pint bottle of olive oil, retailing for 50 cents and our neighbor had a bottle of olive oil that was not absolutely pure, and was selling it for 45 cents or 40 cents, nearly the same, made probably in France, the result would be that not many of the people are expert enough to tell the difference in olive oil, and we would either be thought to be charging too much for our oil or we would have to come down to the price of the other oil and compete with the other man.

Mr. MANN. Is it not invariably a rule in a large city that there are

grocery dealers who charge higher prices and others who charge lower prices for goods, sometimes almost side by side?

Mr. KAISER. That is true.

Mr. COOMBS. One gives longer credit than the other?

Mr. MANN. Or one has a better established reputation than the other.

Mr. KAISER. I think you will find that the difference in cost is almost always on account of the credit given. The cash man sells lower and the credit man has higher prices.

Mr. MANN. All grocery stores give credit, I think; or at least that is the experience that I have had. You go in this town to a grocery store like Magruder's, and you know that you will get what you pay for; but you can go into another store, not very far away, and buy goods at a lower price, appearing in many cases to be the same—and, of course, some people go there and buy, or they could not live—but you know when you go there that you do not know what you are getting. And then you rely upon your own taste at the table to tell whether it is good or not; and if you can not tell the difference, then you are not injured, I guess.

Mr. KAISER. Now, with regard to the penalty, we do not believe that there is any law enacted which does not at some time or other involve an innocent person, but we feel that a penalty attached to a law providing for a true label and a retailer's guaranty would work little hardship; while confiscation would not greatly hurt and publishing would be more severe punishment if it were not for the fact that the manufacturers pack only high-grade goods under their own name, and use an assumed name for the lower grades.

From what I have learned at these hearings I have gained an impression that the feeling aroused against food legislation by actual experience is not caused by the enforcement of food laws but by the multiplicity of rulings, of which no doubt some are not in exact conformity with the law. In my view this condition would not occur under the proposed Hepburn law, which defines adulteration and so forth, while under the proposed Corliss act, which fails to define even the deleterious article, this condition would be still more complicated, as I understand it. According to my understanding the proposed Corliss act is an act providing for rulings. The proposed Hepburn bill embodies all of the features which the Pennsylvania retail grocers deem essential to an effective food law, every one of which we deem practicable and applicable; and without any one of these provisions it would become, like the State laws, incomplete and effective as to its true object and very annoying. Under the guidance of a good law enacted by the United States Congress there is no doubt in my mind that every State will soon enact a law in conformity with it.

Under the Corliss bill one of two things would occur. Either the States would not conform, which would still more complicate the situation, or if they did comply, it would nullify the food legislation in the States as it now exists.

That is all, gentlemen. I thank you for your attention.

Mr. MANN. Speaking of this guaranty business, I will ask you what proportion of the goods in the grocery business are imported?

Mr. KAISER. Imported?

Mr. MANN. Yes.

Mr. KAISER. Well, I could hardly answer that exactly; but I would say 15 or 20 per cent.

Mr. MANN. There would be, of course, no protection to dealers on imported goods?

Mr. KAISER. I think there would.

Mr. MANN. How?

Mr. KAISER. I think that they could get the same guaranty for the reason—

Mr. MANN. Well, the law prohibits it.

Mr. KAISER. Oh, the law prohibits it?

Mr. MANN. That is, it provides that the guarantors shall reside in the United States. Of course, that might protect the retail dealers. Are those imported goods thought to be adulterated to any extent?

Mr. KAISER. As a rule they are not; but, of course, there are grades that are. For instance, if you will allow me to mention Colman's mustard. That has been brought up in several States as an adulterated article. However, they have packed their goods in order to conform with the law in the different States. For instance, for the State of Ohio they pack a mustard that is perfectly pure. It has always been stated that in order to make it palatable it is necessary to add a certain amount of cornstarch, and that is against the law of Ohio. All of Colman's mustard sold in our State has marked upon it "compound"—

Mr. ADAMSON. If we take charge of all food products, have you any objection to the General Government going forward and extending its paternal benevolence, going forward and extending its control to all lines of human conduct?

Mr. KAISER. Not at all; no, sir.

Mr. RICHARDSON. You think that very advisable?

Mr. KAISER. Yes, sir. But it is more necessary as to food products. Take jewelry, for instance. In the case of jewelry a man has a civil action. Of course, the amounts involved in food products are so small that there is no civil action.

Mr. MANN. A purchaser who is imposed upon, who buys a small quantity of groceries from the dealer, has one very effectual remedy.

Mr. KAISER. I do not know what it is.

Mr. MANN. He can transfer his business without any great expense and without any great loss.

Mr. ADAMSON. Do you think that there is a State in the United States which can not be relied upon by its legislation to punish such gross frauds as you gentlemen have talked about throughout this whole pure-food discussion, such cheating and swindling as you have been speaking of?

Mr. KAISER. I want to say that the reason I am here favoring national legislation is this, that we buy a large quantity of our goods out of the State, and of course we can not get at, through the State law, any manufacturer who is outside of the State. That is the reason that we are interested in having national legislation on this subject.

Mr. ADAMSON. Do you think, then, that it will be easier to prosecute a man in the Federal court than in a State court?

Mr. KAISER. Yes, sir; easier to reach him.

Mr. COOMBS. You say that it will be easier to reach him. Do you think that if he was hauled up in the Federal court it would go harder with him?

Mr. KAISER. No, sir; I think this way: If I am buying adulterated goods from a party outside of the State and am caught with those goods, under a similar State law, the food department would pass me and proceed against the manufacturer.

Mr. COOMBS. Do you think, if the venue is the same for both, that you can not produce evidence in the one case the same as in the other and try him at the same place?

Mr. KAISER. We think we can arrange the system of guaranty so that there will be no trouble at all.

Mr. COOMBS. In the very elements of the law there is a guarantee, and has been ever since laws were thought of by man, and there has never been a civilized government in which you could not punish common cheats and swindlers.

Mr. MANN. Answer me another question, as to the present tendency in the handling of food stuffs. Is there not a tendency to put up different food stuffs under distinctive names—such, for instance, as Quaker Oats, and everything of that sort—so that they can sell practically what used to be common articles of food under the name of distinctive articles, and thereby get a little higher prices?

Mr. KAISER. Yes, sir.

Mr. MANN. Well, is that tendency liable to decrease or increase, judging from past experience?

Mr. KAISER. Well, I do not know whether it would have any bearing upon that question or not—

Mr. MANN. For instance, a very few years ago it would have been a very hard thing to see an advertisement in one of the literary magazines of any food product. How many advertisements do you think to-day are in the Century Magazine of food products?

Mr. KAISER. I could not say, because I have not seen a magazine for quite a time.

Mr. MANN. Is not that the tendency in the grocery business? Do you not sell a great many things under distinctive names?

Mr. KAISER. Yes, sir; we do; and under distinctive names are a great many features which we believe this law would bring out.

Mr. MANN. This law does not affect those things at all; does not purport to have any control of those things sold under a distinctive name.

Mr. KAISER. I have failed to view that feature of it.

The CHAIRMAN. Have you anything further?

Mr. KAISER. No, sir. I thank you, Mr. Chairman and gentlemen.

STATEMENT OF DR. WILLIAM C. WOODWARD.

Dr. WOODWARD. Mr. Chairman and gentlemen, I have been requested by Mr. Wedderburn to come before you to express my judgment of the Corliss bill. I shall say nothing with reference to the other measure. The so-called Corliss bill has been but recently brought to my attention, and for that reason I have not given it the attention that I might otherwise have given. As I have not, I regret to say, attended any of the hearings before the committee, it is not at all certain that I shall not undertake to inform the committee along lines that they have been already fully informed upon.

The Corliss bill seems to me to be an impracticable method of guarding against food adulterants. One of the most serious obstacles in the way is that it makes no provision for branding the articles of food so far as to indicate their place of origin. It might as a result be a very difficult matter in a State to determine whether the good had originated inside of the State or outside of it.

Mr. MANN. The House has just passed a bill to prevent false branding of goods.

Dr. WOODWARD. This does not provide for their being branded at all, and yet knowledge of the origin of the articles under inspection would be necessary before an inspector could act. Another objection is that under the bill as it now stands a dealer would be at liberty to refuse to sell samples for analysis.

Mr. MANN. It is clear that that would be an impracticable provision and an unconstitutional provision to provide that a man should furnish evidence against himself to convict himself of a crime.

Dr. WOODWARD. At the same time he is punished in the District of Columbia for refusing to sell.

Mr. MANN. Has any one ever been punished for so refusing?

Dr. WOODWARD. Yes, sir.

Mr. MANN. If he had carried his case to the courts he would not have been.

Mr. ADAMSON. For refusing to sell goods?

Dr. WOODWARD. Yes, sir; to an inspector. It is a commonly recognized principle that that can be required, for the simple reason that it is necessary to enable a State to enforce any food law at all.

Mr. MANN. The Constitution of the United States says—

Mr. RICHARDSON. You mean that he could not refuse to sell me something that he had when I wanted to pay for it?

Dr. WOODWARD. Yes, sir.

Mr. MANN. That is silly, on its face.

Mr. RICHARDSON. There are a great many laws in the different States about hotel keepers—

Mr. ADAMSON. I think if that is true that you ought to join me in the situation that all this legislation would be far more harmful than the food could possibly be.

Dr. WOODWARD. We are operating here now under the act of Congress, and the court has thus far sustained it on the principle that it is a necessary incident to the enforcement of a law against adulteration.

Mr. MANN. I presume that you are a lawyer?

Dr. WOODWARD. I am a member of the local bar.

Mr. RICHARDSON. You say you have known men to be punished for refusing to sell goods?

Dr. WOODWARD. Yes, sir.

Mr. ADAMSON. What makes them call you "Doctor"?

Dr. WOODWARD. I have the degree of doctor of medicine as well as that of master of laws.

There is another provision here that would interfere very materially with the enforcement of the law, and that is the provision in section 3, that the substances must be deleterious to health "in the quantity used or intended to be used."

Mr. RICHARDSON. It qualifies it.

Dr. WOODWARD. Yes, sir; and it would be impossible, of course, to say that any particular substance was deleterious to health in the quan-

tity intended to be used without determining first whose intentions were to govern, and this the bill does not do; and it would be impossible, too, to say that any article was deleterious in the quantity in which it had been used, because it would be impossible to measure what had already been used, and under all ordinary conditions the consumer does not measure his food with sufficient accuracy to enable him to establish in court the quantity accurately enough for the purposes of this bill.

Mr. MANN. That is a matter of evidence, and the lawyers might not agree with you.

Dr. WOODWARD. You could not determine how much was intended to be used unless you know whose intentions were to govern.

Mr. MANN. Of course you could. It is a simple proposition. If you could not, none of the food laws would have any effect.

Dr. WOODWARD. This bill does not say "the amount deleterious to health if given to any designated individual," and yet the question is whether the substance used in what is supposed to be a more or less definite quantity will injure the health.

Mr. MANN. If poison was put in flour you could not tell whether it was deleterious?

Dr. WOODWARD. We could determine that poison was there.

Mr. MANN. If there was a little poison there it would not be?

Dr. WOODWARD. It depends on the quantity used or intended to be used.

Mr. MANN. But you could not determine that, as an expert?

Dr. WOODWARD. No, sir; not the quantity intended to be used.

Mr. MANN. You could not determine whether a poison in flour was deleterious to health or not?

Dr. WOODWARD. Yes, sir; we could determine that.

Mr. MANN. That is all you could determine—

Mr. RICHARDSON. That would be in the nature of a penal act, and it is bound to be construed strictly, and when they come to the quantity intended to be used it would devolve on the prosecution to show it?

Dr. WOODWARD. Yes, sir.

Mr. RICHARDSON. I submit that you are right about it.

Dr. WOODWARD. That is a matter that seems to me to merit consideration. It does not indicate whose intention shall guide the court in determining how much is going to be used.

Another objection to this bill is that there is no provision for holding or confiscating goods pending the analysis, which would be necessary to prevent the removal of goods after the sample had been sold, and yet which would be practically impossible as it would amount to suspending property rights with any form of trial whatsoever. The inspector, for instance, gets a sample of food and analyzes it. Then he goes back two or three weeks later to act against the goods shown by analysis to be liable to confiscation only to find that they are gone. There is no way of holding them in the meantime, nor do I see any means by which that could be accomplished.

Mr. MANN. When it comes to the consideration of commencing the proceedings, of course if you are going to proceed in rem against each parcel of goods that you find in the hands of the retailer in the State it would make it very difficult of enforcement.

Mr. COOMBS. I believe the law provides for that.

Mr. MANN. Would it be any harder to proceed against the dealers themselves?

Dr. WOODWARD. The proceeding in rem itself would be more difficult.

Those are the only features that I have had brought to my attention with reference to this bill. Of course, I would like to be regarded here as speaking not from the standpoint of a physician, but from the standpoint of the executive officer who is in charge in the District of Columbia of the enforcement of the pure-food laws, and is familiar with the difficulties which stand in the way of enforcing such laws.

Mr. MANN. Are there any impure foods sold in the District now?

Dr. WOODWARD. Yes, sir.

Mr. MANN. Why do you not stop it?

Dr. WOODWARD. We have very much limited the sale of impure food.

Mr. MANN. Haven't you got a good law here?

Dr. WOODWARD. Yes, sir; but it does not necessarily prevent such sales any more than the laws against murder and robbery have prevented murders and robberies.

Mr. MANN. That depends very much on the enforcement of the law. Murder is done in the heat of passion and robbery is done in the dark, but the sale of impure food goes on in the broad daylight.

Dr. WOODWARD. We have succeeded in punishing the wrongdoers.

Mr. ADAMSON. Do you not think it would be more practicable and answer all the purposes of commerce, and protect all consumers of foods, or any customers to be affected by it, that a brief statement of the elements of the article should be placed upon each package?

Dr. WOODWARD. That involves a discussion of the other bill, which is a rather massive piece of legislation.

Mr. ADAMSON. I do not mean any bill; I mean as a general proposition would not that, and go no further, be the most practical and useful thing that we could do?

Dr. WOODWARD. I think probably it would. I think the great necessity for Federal legislation lies in the control of the original packages.

Mr. MANN. Do you meet that difficulty in the District of Columbia?

Dr. WOODWARD. We act under Federal legislation, and of course Congress is not embarrassed by any difficulties of that sort.

Mr. COOMBS. That Federal legislation as applying to the District of Columbia is not a general law; it is like a special act of the legislature of a State. It does not go outside of the District of Columbia.

Dr. WOODWARD. No, sir; it does not go outside of the District, but it has all the authority of the Congress behind it.

Mr. COOMBS. But it has not any more authority than the State acts have for themselves.

Dr. WOODWARD. I think so.

Mr. COOMBS. Why?

Mr. MANN. You have no experience in the States?

Dr. WOODWARD. Because in the case of the District of Columbia Congress possesses police power which is not limited by anything analogous to a State constitution, and has, moreover, certain authority of which the States have stripped themselves, and which they have given to the Federal Government. The State legislation is limited by the Federal Constitution and by the constitutions that have been

handed up to the legislatures of the various States by the people of such States.

Mr. COOMBS. The powers of Congress pertaining to matters in the District do not pretend to reach outside of the District?

Dr. WOODWARD. No, sir.

Mr. COOMBS. The act of Congress simply has the effect of a State law within a State, and no more?

Dr. WOODWARD. That might be.

Mr. MANN. Do you have any difficulty in the enforcement in the District of Columbia of the present food legislation here?

Dr. WOODWARD. There is no difficulty in the health department except a deficiency in the money, the laboratory facilities, etc. The complaint comes from the dealer and not from the health department.

Mr. MANN. So far as the food laws of the District are concerned, you have ample authority at the present time?

Dr. WOODWARD. We are asking no new legislation, and we feel that we need none at the present time. The defects in the law which have been discovered have been unimportant.

**STATEMENT OF MR. A. C. MORRISON, SECRETARY-TREASURER
OF THE AMERICAN BAKING POWDER ASSOCIATION, TOWN-
SEND BUILDING, NEW YORK.**

Mr. MORRISON. Mr. Chairman and gentlemen, the American Baking Powder Association has 60 members. It has something like 475 contributors in addition to these members, and represents in the aggregate approximately 524 manufacturers of baking powder scattered all throughout the States of the United States—almost without exception.

This aggregation of manufacturers, under the name of the American Baking Powder Association, is not a combination in restraint of trade. The association takes no active part in the affairs of the individual members, and has nothing to do with their business, has nothing to do with fixing prices, and has no arrangements with the manufacturers of materials by which the prices are raised or lowered to the consumers. In fact, it is a business organization, like the Wholesale Grocers' Association or the Retail Grocers' Association. It has been organized for the past two years.

The object of this organization is to hold together and concentrate for defense against the aggressions of a single giant corporation, the manufacturers of baking powder who use alum as an acid ingredient.

The annual output of the members of the American Baking Powder Association is upward of 86,000,000 pounds, and this represents about 86 per cent of the total output of baking powder for the United States, the remaining 14 per cent being known as cream of tartar baking powder. Of this 14 per cent fully 12,000,000 pounds are put out by a single institution known as the Royal Baking Powder Company, which is a combination of the Royal Baking Powder Company, the Cleveland Baking Powder Company, and the Price Baking Powder Company, and includes the manufacturers of cream of tartar. The Royal Baking Powder Company by this combination practically controls not only the importation of argol, from which cream of tartar is made, but is in a position to absolutely dominate the market for cream of tartar throughout the United States.

While it would be possible for a manufacturer of alum baking powder to secure cream of tartar in sufficient quantities to put out a small quantity of cream of tartar baking powder by the purchase of supplies from his rival, the Royal Baking Powder Company, at the same time it is extremely doubtful if the Royal Baking Powder Company would sell a sufficient quantity of cream of tartar to enable the alum manufacturer to develop largely in the manufacture of cream of tartar baking powder. Alum and cream of tartar are the only two practical acid ingredients for the manufacture of baking powder.

Phosphate has recently become slightly more practicable through a patent on granular phosphate by which baking powder with phosphate as an ingredient is made commercially possible. It will keep better than formerly; but this phosphate is patented, and the manufacture under this patent is said to be controlled by the Royal Baking Powder Company.

The net result is that the alum baking-powder manufacturers are obliged to use alum. Further than that, they prefer to use alum; and further than that, alum has proved itself to be the most healthful ingredient for baking powder.

It is doubtless a surprise to those who are familiar with the trade controversy that has existed for many years between the manufacturers of the alum and cream of tartar baking powders to see a representative of the alum baking-powder industry duly accredited by proper resolutions to appear before you in advocacy of the most stringent pure-food laws. I am here for that purpose to-day. I am here in favor of the Hepburn bill.

We are strong advocates of the modified Brosius bill, now known as the Hepburn bill, which contained two amendments which we secured.

I am here to-day in favor of those amendments. I am here to ask you to report that bill, and our reason for desiring this will be given.

There are in this country numerous State laws with strict requirements. In none of these States except Missouri have we any trouble in the sale of alum baking powder. In the State of Missouri a law was passed which stated that no harmful and deleterious substances, to wit, arsenic, alum, bismuth, antimony, and some others, could be sold. It was passed without any knowledge on the part of the baking-powder manufacturers that an attempt was being made to drive them out of the business. That law was pushed through by the Royal Baking Powder Company, or its predecessors. Its enforcement was conducted by them. Their witnesses and their attorneys are pushing that law to-day and not the State of Missouri.

The thirty-one manufacturers of alum baking powder in the State of Missouri are legally out of business on account of this law. The Royal Baking Powder Company has been introducing these laws in other States persistently for several years. Last year it was necessary for me to appear before various legislative committees and various State legislatures until twenty-two such measures were defeated. The Royal Baking Powder Company is fond of charging that we are trying to defeat pure-food legislation. This is absolutely false. Their method is as follows: They begin in a State and advertise, using pure reading matter, without any notice that these articles in the papers are advertisements, declaring alum to be a very terrible substance. They will keep that up for months. Their expenditures for advertising in this manner are very, very large. Soon the legislature meets, and then a

l appears forbidding the use of salts of alumina in any form in any articles used in the preparation of food.

Then it goes before a committee, and eminent chemists appear and testify against alum. Then we expose the scheme, but the committee nearly always reports against us. We then expose the whole conspiracy. The bills have always been defeated—28 of them in the last two years. For instance, one is pending in Massachusetts to-day which will drive us out of business in that State if passed.

This conspiracy was completely exposed before the Industrial Commission of the United States, and the Royal Baking Powder Company failed to disprove the grave allegations. It has been taken up by the Committee on Manufactures of the United States Senate. We are tired of this class of strike legislation. We believe that a genuine pure-food law, which takes up both sides of the question and says that we shall not use anything harmful and deleterious, and shall not use any improper ingredients in the manufacture of articles of food, is the proper law.

The Hepburn bill says that an article shall be deemed adulterated providing it contains a harmful and deleterious substance. Under that law, if our article is harmful and deleterious, we will go out of business. We are willing to go into court about that at any time. We have been in court in the State of Missouri on the Missouri law, and the court decided that there was no evidence that alum baking powder was unwholesome.

I do not know how much the other side spent, but it cost us several thousand dollars to defend that case. The court asked every expert: "Have you, in your experience as a student of food products or in your reading, ever come across a case of malnutrition or disease which you could attribute to the use of alum baking powder?"

They all answered "No." That was on cross-examination.

Mr. RICHARDSON. Was that in a Federal or State court?

Mr. MORRISON. In the State court. That is now before the Supreme Court of the United States here on appeal. The court stated that in view of the fact that over 60,000,000 people in the United States are using alum baking power, and it has been used in increasing quantities for the past twenty-five years, and the prosecution failed to present to the court a single case of malnutrition or disease which can be attributed to its use, that this fact stands like a stone wall against the prosecution. "But," said the court, "the legislature has a right to pass this law, and the law is valid, and I am obliged to declare these retail grocers guilty."

Mr. RICHARDSON. Holding that it was unwholesome?

Mr. MORRISON. Holding that it was wholesome, but nevertheless the legislature had a right—

Mr. RICHARDSON. To pronounce it unwholesome?

Mr. MORRISON. Yes, sir; that is, the legislature was supreme.

Mr. TOMPKINS. The legislature had a right to prohibit its sale whether it was wholesome or unwholesome?

Mr. MORRISON. Yes, sir; and we have appealed that to the Supreme Court of the United States, and the decision is to be given, I think, in April.

Mr. COOMBS. Suppose the legislature passed a bill prohibiting the sale of unwholesome articles. And that is the express object of the bill?

Mr. MORRISON. Yes, sir.

Mr. COOMBS. And suppose it includes something in it which by chemical analysis you can prove is not deleterious; does that constitute the bill—

Mr. MORRISON. Under the decision?

Mr. COOMBS. Under the decision.

Mr. MORRISON. The decision simply stated this: Whereas the lower court declares that alum baking powder is wholesome (and the evidence was reviewed by the supreme court of Missouri, and they took great pains to make it clear) and the evidence indicates that the lower court was correct in its conclusion that this article is wholesome. Still there is a conflict of the scientific testimony which was probably taken into consideration by the legislature of the State, and the legislature in passing this law had the right to do so; therefore the law is constitutional.

Mr. RICHARDSON. Is it not a fact that the State legislature passed a law saying that no unwholesome ingredients should enter into food without saying the particular articles?

Mr. MORRISON. That is absolutely constitutional.

Mr. RICHARDSON. It did not name the articles?

Mr. MORRISON. The Missouri alum law did. That is the trouble. All these State laws say flatly "any harmful and deleterious article prohibited." There is no question about that. We say that they are all right. Nobody dares to question them. But these subtle laws that are put in by these people say: "You shall not use salts of copper, salts of zinc, salts of alumina, in articles used in the preparation of food."

Mr. MANN. Because they claim that they are unwholesome?

Mr. MORRISON. Because the Royal Baking Powder Company is trying to drive us out of business. And we do not propose to be driven out of business.

Now, we think that if a national law is passed the State laws will be conformed to it, and if the national law is strong enough to say that nothing harmful and deleterious shall be used, and that law will hit us if we are wrong, we are ready to abide by the result; but we are not afraid of such a law.

That is why I am here to-day advocating the passage of some measure as strong as you can make it.

Mr. MANN. So that you are willing for that?

Mr. MORRISON. We are not afraid of this law. I am here under instructions to forward this measure and urge it and do everything in my power to have it passed after it leaves this committee.

I do not think the committee has any idea of the trouble the manufacturers are going through on account of the misinterpretation of the food laws. I do not think this bill gives the people anything they do not want, and I do not think you can pass such a bill unless people at large are getting protection out of it. I say if you could only get a national law which is broad enough to cover this subject and relieve the manufacturers of any necessity of going about as I have been going during the past years to the legislature of nearly every State to fight strike bills, you would be doing a great service to the manufacturers of this country.

There are two amendments in this bill which are not in the original Brosius bill, and I desire to call the attention of the committee to them.

One of them affects the question of the labeling of baking powder. There has been an attempt through the various committees to compel us to put "This baking powder contains alum" on the cans. We resist that, because the moment that we do it the Royal Baking Powder Company will begin to advertise in reading articles and other advertisements that alum is a rank poison; "Beware of alum—it is deleterious to health;" and they will ram that down the throats of the people, and the minute that they see alum on a can we will be discredited.

However, we are willing to label our cans "Alum," provided you compel all baking powder manufacturers to put on the cans not only the ingredients contained in the powder but the resulting substances which are left in the food when ready for consumption. If I should label a can of carbonic-acid gas, "Sulphuric acid and marble dust," people would not be apt to use it. Now, sulphuric acid and marble dust create carbonic-acid gas.

If I should ask you whether hydrochloric acid and bicarbonate of soda would be a fit agent for the leavening of bread, you would say, "That is terrible," because hydrochloric acid is dangerous; yet Von Liebig said that that combination would be the ideal leavening material. Why? Because the residue left in the food is common salt.

Now, you understand that when soda and an acid come together it creates carbonic-acid gas, and a residue is left. In the case of alum and soda there is no alum left in the food.

Now, it is the residue left in the food that people are interested in. That is what goes into the stomach. We are perfectly willing to show what goes into the stomach, and that is in entire harmony with this Hepburn bill. We want to show the people not only what is in the can, but also what goes into their stomachs—just what they are eating. It would be misleading to label the can "Alum and soda" or "cream of tartar and soda." That would not inform the people what goes into their stomachs, because it is neither cream of tartar nor alum—that goes into the stomach.

Mr. RICHARDSON. The trouble about that is the impracticability of it. How are you going to put on a separate and distinct label as to what different ingredients, all of which are healthy, enter into one composition to make up a certain thing; how are you going to put them all there? It looks to me as though it was impracticable.

Mr. MORRISON. There is a very simple answer to that. Every manufacturer of baking powder knows exactly what his residue is. If you compel him to label at all, we want you to make him put all the ingredients on the can and tell him that he must also label it with the residue. If he labels incorrectly, your administrator of the law will soon find it out. If his label is right, there will be no difficulty at all. But, if you compel him to label at all, compel him to do it fully. That is what we ask here:

That substances which enter into the preparation or preservation of food, and which change their chemical nature in the preparation of food, shall be branded at the time of manufacture with the names of the resulting substances which are left in food produced when ready for consumption, together with the name and address of the manufacturer.

Mr. RICHARDSON. That is as to the manufacturer. Now, when you give it out to the retailers.

Mr. MORRISON. We will put on every can what is in the can, and what is left as a resultant of the chemical action that takes place where it is used as food.

The CHAIRMAN. Now, if you label this commodity you are illustrating with, if you label it "alum," the scientific man would know what the residuum was, but the nonscientific person would not?

Mr. MORRISON. He would have no idea at all.

The CHAIRMAN. So that what you want is full information which will bring the knowledge to the mass of the people?

Mr. MORRISON. Certainly. We want to go as far as we can.

The CHAIRMAN. If all persons were scientific, the first method would be sufficient?

Mr. MORRISON. Yes, sir; but we want the people to know all about it. For instance, alum baking powder contains bicarbonate of soda and starch, leaving as a residuum hydrate of alumina and sulphate of soda.

Mr. RICHARDSON. Do you think the common people would understand that?

Mr. MORRISON. It would be ascertainable.

Mr. COOMBS. They would have to ask their family physicians what the effect of that would be?

Mr. MORRISON. They have a right to do that. If they ask the family physician if unchanged alum is good in its effect, he will say no. He forgets all about the fact that there is no alum in the food when the chemical reaction takes place. It is only necessary to take up the newspaper anywhere to see it stated that alum is a bad thing in food. True, alum has been used as an adulterant of flour, and, used in that way, it is deleterious.

Alum baking powder should be labeled:

This baking powder contains alum, bicarbonate of soda, and starch, leaving a residue of hydrate of alumina and sulphate of soda.

Mr. COOMBS. That is the residue which goes into the stomach?

Mr. MORRISON. Yes, sir. Now, when I say residue, understand that the alum and soda are out of it, that they have gone through a chemical reaction, and the result is hydrate of alumina and sulphate of soda.

Mr. COOMBS. He would have to be a mighty well-educated man to know what that means.

Mr. MORRISON. It would be better to give him full information, even if he did not know at the time what it meant, rather than to deceive the public by only giving him partial information.

That is the reason there is going to be no trouble in the administration of this law. The manufacturer knows what it is, and he can put that on the can; and if he is wrong, let your scientific experts say so, and let him suffer the penalty of the law.

Mr. COOMBS. What is the difference in the cost of the alum and cream-of-tartar baking powders?

Mr. MORRISON. Forty cents to 50 cents a can. The price of the Royal Baking Powder is 50 cents a can. The directions say two spoonfuls to a quart of flour. The price of alum baking powder is 10 cents a can, and one spoonful to a pound of flour. Therefore, the can of alum baking powder at 10 cents a can will last twice as long as a can of Royal Baking Powder at 50 cents a can, and the difference in cost is the difference between 10 cents and a dollar. With the Royal Baking Powder it takes over 70 per cent of the cost of the flour to leaven the bread. In the case of the alum baking powder, it takes but 7 per cent of the cost of the flour.

You understand that this cream of tartar baking-powder business is advertised by extolling, first, its merits; that is proper. And then it is advertised by falsely condemning alum baking powder. But in spite of the Royal Baking Powder Company's nearly \$600,000 a year advertising expenditure, alum baking powder has the commercial advantage; and now that alum baking powder is proven wholesome, it is only a question of time when the cream of tartar people will be eliminated from business.

Mr. RICHARDSON. I understand you to say that the cream of tartar has only 14 per cent of the business now?

Mr. MORRISON. Yes sir; and we have 86 per cent of it.

Mr. RICHARDSON. According to your calculation as to the difference in the price, you would soon drive them out of business?

Mr. MORRISON. We will drive them out eventually.

Mr. RICHARDSON. Absolutely?

Mr. MORRISON. Simply by that economic advantage, and by the irrefutable fact that our powder is the best powder.

Mr. RICHARDSON. You have got them down to 14 per cent now, and it looks to me as though you would soon have them clear out.

Mr. MORRISON. I state as an economic probability that this \$20,-000,000 corporation is going to the wall. And the reason they are fighting us so is that they are aware of the danger.

While they are reviling alum baking powder in the North they are supplying the South with over 10,000,000 pounds annually. I simply state that on information, and you may take it for what it is worth.

Now, the Brosius bill provided that a commission should fix the standard of food products and that these standards should remain the standards before all courts. We fought that to a finish. We do not want anybody to have the power to fix a standard from which we might differ and then find it would require an act of Congress to have that standard changed, and so, on the request of the United States Senate Committee on Agriculture, we got certain jurists, who were with us, to draw a provision to the following effect:

Such standards and determinations, when so fixed by the Secretary of Agriculture for the use of the chemists of the Department, may be read in evidence in the United States courts, but shall not be considered as determining the adulteration of any articles under section 6 of this act until such standards and determinations are approved in the courts.

That gives a certain prestige and force to those standards which have been established by this Commission.

The CHAIRMAN. What does that mean, "Are approved in the courts?" It looks to me as though that was indefinite. Will the holding of that court, where that question may have presented itself, make this standard a fixed thing in law, or does it mean that it is never to be so recognized until that particular court has approved it?

Mr. MORRISON. Perhaps it would be better for me to answer that question by stating the facts.

The Senate committee has informed us that they have stricken out lines 11 to 17, page 9, on legal grounds.

I want to go on record as saying that we would rather that the administrators of the law should go into court and establish their standards. We are willing that these standards, however, should have all the force and authority of a finding of the United States Government, and if the Senate committee or this committee wishes to

strike that out, all right. But I want to call your attention to that amendment for this reason. In the old Brosius bill was the requirement that these standards should remain as standards in all courts. Senator Mason has introduced a bill on the other side of the Capitol in which that language appears. We believe that is unjust and wrong. We believe that every man has a right to appeal to the courts, and that you have no right to establish a board which shall, on ex parte statements, establish standards. We want the right to cross-examine.

I can finish everything that I want to say by the broad statement that the manufacturers of alum baking powder desire to go on record as advocating the most stringent food laws that you can enact, and if their product is not wholesome they are willing to take their medicine. We are willing to do anything in our power and anxious to do everything in our power to aid the committee in getting full information and in the passage of the Hepburn bill.

Thereupon, at 12 o'clock m., the committee adjourned until to-morrow, March 18, at 10.30 o'clock a. m.

MARCH 18, 1902.

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

The CHAIRMAN. We will be glad to hear either of these gentlemen who are here this morning on the pure-food question as it is presented to us in five bills that are here, one of which is known as the Brosius bill; another as the Mann bill; another as the Corliss bill; those are the three that are most important, as it seems just now.

STATEMENT OF MR. E. L. JORDAN, OF WASHINGTON, D. C.

The CHAIRMAN. What relation have you to this question or to any societies that are interested in the pending legislation?

Mr. JORDAN. I am president of the National Retail Liquor Dealers' Association of the United States.

We simply come here to-day to ask that in the enactment of any bill that might be recommended by the committee or indorsed by them the retailers shall have some protection. If the retailer buys an article and pays for it, and thinks it is all right and properly represented, and afterwards finds that he has been deceived, the wholesaler or distiller who has deceived him, we think, ought to be held liable, and that we should not be held for that and made a target, as we believe we would be if the Corliss bill was enacted in law. But we have no bill to favor. The only thing we want is protection for the retailer. We would like to see a bill enacted by which the goods would be warranted, and they would have to come up to the standard. That is about all that we are interested in in this matter.

The CHAIRMAN. Would you favor legislation that would provide for the branding of an article so as to show just what it was?

Mr. JORDAN. Yes, sir.

The CHAIRMAN. Do you think your association would favor that?

Mr. JORDAN. I have no doubt of it.

Mr. COOMBS. What is your association?

Mr. JORDAN. The Retail Liquor Dealers' Association of the United States.

Mr. COOMBS. How extensive is that?

Mr. JORDAN. About 165,000.

Mr. COOMBS. Does it take in all the States in the United States?

Mr. JORDAN. Yes, sir.

Mr. COOMBS. All over the country?

Mr. JORDAN. Pretty near; yes, sir.

Mr. COOMBS. It is a national association?

Mr. JORDAN. Yes, sir.

Mr. COOMBS. And the central association is—

Mr. JORDAN. The national association; yes, sir. The secretary's office is in Chicago, and my offices are in Washington, D. C. I happen to have been a member of the legislative committee here for a number of years. That is about all we wish to say. We do not want to take up your time. We want the retail liquor dealers protected, so that if they are deceived they shall not be made to suffer the penalty of another's wrongdoing.

STATEMENT OF HUGH F. HARVEY, PRESIDENT RETAIL LIQUOR DEALERS' ASSOCIATION OF THE DISTRICT OF COLUMBIA.

The CHAIRMAN. What is your official position?

Mr. HARVEY. President of the Retail Liquor Dealers' Association of the District of Columbia.

I heartily indorse exactly what Mr. Jordan, the national president, has said, and the District of Columbia Retail Liquor Dealers' Association would indorse and be heartily in favor of any bill that would put a pure article on the market. But the retailer does not want to be responsible for what the wholesaler does. The retailer wants to stand on his own bottom in the matter, and when he buys goods in good faith from the wholesaler or the compounder or distiller, he does not want to buy them in good faith and then have to suffer because, this bill having become a law, they should prove contrary to what they were represented to him.

If any law can be enacted that will put a pure article on the market where the retailer will be responsible entirely for what the retailer does, we are in favor of it and would like to be on record as being in favor of such a law.

The CHAIRMAN. Are you in favor of a law that would require branding of foods and drinks?

Mr. HARVEY. With exactly what it contains?

The CHAIRMAN. Yes.

Mr. HARVEY. Yes, sir.

Mr. COOMBS. Now, in throwing the responsibility on the wholesale dealer, you do not mean by that that the retailer should be relieved of the responsibility of making proper inquiries and being on his guard with reference to his purchases, do you?

Mr. HARVEY. No, sir. I think that there should be some form of guaranty that would accompany the goods from the wholesaler or manufacturer to the retailer.

Mr. COOMBS. That is a civil proposition, as between the two. The wholesaler would be civilly liable to the retail dealer, or criminally responsible to the Government, for the violation of his agreement.

Mr. HARVEY. The wholesaler?

Mr. COOMBS. Yes, sir.

Mr. HARVEY. The wholesaler, I think, should be responsible for his goods in the original package. My only point is that I do not think the retailer should be held responsible for that which he is selling as pure goods.

Mr. RICHARDSON. Over his counter, provided—

Mr. ADAMSON. If he discovers that it is deleterious, you would not have him go on selling it, but he should cancel and ship back his consignment.

Mr. HARVEY. How would he discover it?

Mr. MANN. His customers might inform him.

Mr. HARVEY. I do not know by what means he would discover it. I am speaking from a practical standpoint. I can not understand how a customer would exactly know—

Mr. MANN. It is a matter of detail how he would know it, learn it; but if he were informed, you would not expect him to be protected in further sales of those articles.

Mr. HARVEY. He ought to be protected in this matter.

Mr. MANN. Let him send the goods back to where he got them.

Mr. HARVEY. If he could return them without loss to himself. But we do not want any confiscations; we do not want that anybody should come and take them away from him.

Mr. ADAMSON. Let him reship them to the consignor.

Mr. HARVEY. Yes, sir. As to liquors and the compounding of them, most drinkers prefer articles that are compounded. They do not prefer the straight article. I think that in the District of Columbia 24 men out of 25 who drink whisky want a blended whisky instead of a straight whisky; that is, some other articles put with it so as to make it smoother and so that it will not bite so much, and half a dozen liquors might be put together, and all pure, but there might be something put in there that was not considered pure by the inspector, and, if the law was in effect, they would be confiscated.

Mr. COOMBS. You take a guaranty between two persons, and that is simply a civil contract between them. How would you have that enforced in case of the violation of it?

Mr. HARVEY. Gentlemen, I think it is a very difficult matter to get a law that will please everyone.

Mr. COOMBS. Would you make them responsible to the Government?

Mr. HARVEY. I beg your pardon; make whom?

Mr. COOMBS. The guarantors?

Mr. HARVEY. Yes, sir; I think a man that guarantees an article, a manufacturer who absolutely knows what is therein, should be responsible.

Mr. COOMBS. That relieves the retail dealer, and the Government then takes charge of the execution of the law; is that your idea?

Mr. HARVEY. Yes, sir. It is just back where we started—that the retailer wishes to be protected from the consequences of what the wholesaler does. He wants to be responsible just for his own acts.

Mr. COOMBS. This guaranty between two people is not enforced as ordinary contracts between people are.

Mr. HARVEY. Which contract is not enforced?

Mr. COOMBS. The guaranty.

Mr. HARVEY. The guarantees? I do not know whether they are

enforced; but if this law were passed it seems to me that the guaranty would have to be enforced and lived up to.

Mr. COOMBS. I simply wanted to know how far the retailers wanted to be relieved from the responsibility of the contract into which they enter with the wholesaler.

Mr. HARVEY. I think the retailer ought to live up absolutely to the contract, if he enters into any.

Mr. ADAMSON. You say that most of the Washington drinkers want blended whisky. How would you indicate blended whisky—by labeling?

Mr. HARVEY. I do not know how that would be done, but most of our popular brands of whisky here are blends.

Mr. ADAMSON. I understood you to say that you favored labeling all the articles with the constituent elements. If you had a bottle or a keg of whisky made up of four different grades, and you advertised that whisky, I suppose your plan would be to state on there how much of each kind and how much of each age was used—on the label?

Mr. HARVEY. If the wholesaler is to be held responsible and he gives a guaranty, I do not see by what other means the inspector or chemist would ascertain that he was not telling the truth if the guaranty or label did not state what was in the package.

STATEMENT OF MR. HOOPER COYNE, MANAGER OF THE SEA-GULL SPECIALTY COMPANY, OF BALTIMORE, MD.

Mr. COYNE. Mr. Chairman and gentlemen of the committee, you may be surprised to know that I appear before you in the interest of pure-food legislation when you learn that I am a manufacturer of alum baking powder. Such is the case, however, and we ask for the passage of the most stringent food law that you can frame.

As manufacturers we realize the impossibility of securing the passage of a bill that will suit all manufacturers, jobbers, or retailers. We therefore ask that you give us the best bill before you.

Mr. FLETCHER. Will you tell us what that is?

Mr. COYNE. We think the Hepburn bill. No permanent hardship will be imposed on any manufacturer. Manufacturers, jobbers, and retailers should be given a secondary consideration, we think, as the primary object of pure-food legislation should be and is protection to the consumer.

The administration of this pure-food law may cause manufacturers some temporary annoyance, but will eventually be to their benefit and will elevate the standard of commercial honesty. We do not believe that the Corliss bill would cure the evils of impure food and food adulteration. Confiscation is an insufficient penalty. It would, however, leave manufacturers free to practice fraud and give practically no protection to the consumer, which is the object of pure-food legislation.

We think the Hepburn bill is the best bill that has ever been brought before Congress. We have studied it very carefully and are willing to stand by it and take our chances. It may cause us some temporary annoyance, but we are willing to reconstruct our business and get the question settled, so that we may be able to stay at home and attend to business instead of having to come to Washington and go around to the various State legislatures to kill off strike bills.

We think the Hepburn bill would protect the public against harmful adulterants as well as frauds. We therefore ask your committee to give that bill your favorable consideration. It will not hurt any manufacturer, or rather any manufacturer of honest food products, and the others can take their chances.

We call your particular attention to the residue clause in the Hepburn bill, which gives the consumer full information about his purchases. It is not half information, but it is complete and thorough; tells him what goes into the food as far as our product is concerned. We are willing that the consumer should know exactly what goes into the food with our product. We are quite willing to state the ingredients in the package and the resulting substance that goes in the food.

Mr. MANN. What is the residue clause?

Mr. DAVIS. What brand of baking powder do you represent?

Mr. COYNE. Three brands—the Seagull, the Bob White, and the third is known by the euphonious name of "Parrot and Monkey," and they are all straight alum baking powders, pure and wholesome.

The CHAIRMAN. Suppose that alum is taken into the stomach without any chemical change; is that deleterious?

Mr. COYNE. If the quantity is sufficient; but with our baking powders that is not the case.

The CHAIRMAN. I am not asking about that. We will get to that after while.

Mr. COYNE. Yes, sir.

The CHAIRMAN. Now, suppose that in the process of baking, this chemical change does not occur. Is it not possible that it might not occur, and that the alum would still remain in the baking powder or in the bread?

Mr. COYNE. I think it is hardly possible. None has ever been discovered, although various analyses have been made with that object in view.

The CHAIRMAN. It is the heat, is it, that is applied, which brings about the change and leaves this resultant?

Mr. COYNE. The application of water, first, sir; and then heat.

The CHAIRMAN. Suppose there is insufficient baking, and the chemical process is not complete, is it possible that there might remain alum rather than a residuum of alum?

Mr. COYNE. Not in a properly compounded baking powder, sir. We will assume that alum in undue proportions is harmful. We are all more or less influenced by selfish interests. Alum is the most expensive constituent of alum baking powder. That, in combination with soda, is what liberates the carbonic acid gas in the powder, and no manufacturer would be so foolish as to use an excess of the most expensive element in making his product.

The CHAIRMAN. The suggestion was made to me that the chemical process might not be complete and there might be the presence of unchanged alum.

Mr. COYNE. For many years there has been a continued effort to find such an alum baking powder. It would be of incalculable benefit to the manufacturers of other baking powders compounded with different acid ingredients if they could find such a powder. They have been unable to do so.

Mr. COOMBS. That depends on the skill, does it not, in mixing the proportions? Suppose some one started in with a new plan, and by

reason of inferior process should mix the chemical compounds improperly. Might there not be danger in a case of that kind?

Mr. COYNE. It might be possible, but no such manufacturer could live against the competition for a day.

Mr. COOMBS. Suppose that he lived one day and killed a lot of people?

Mr. COYNE. He could not kill them, sir.

Mr. COOMBS. Well, make them sick?

Mr. COYNE. He could not do that.

Mr. ADAMSON. Would it be objectionable in your trade to require each manufacturer of baking powder to label the package with the formula on the wrapper?

Mr. COYNE. There is no objection to that.

Mr. ADAMSON. You think that would answer the purpose in view?

Mr. COYNE. It would give the consumer half information. It would not accomplish the purpose of the bill. The object of the legislation is to thoroughly inform the consumer of what is in the article.

Mr. ADAMSON. I do not believe you can thoroughly inform him in that way. If he has the information conveyed by the label, what does he know—

Mr. COYNE. It is not the object of the bill to educate the consumer of the mixture; it is to inform him as to what he buys.

Mr. ADAMSON. It is a general conclusion as to whether you think it is safe for him to eat or not.

Mr. COYNE. Certainly; but he does not eat alum, sir.

Mr. ADAMSON. What does he do with the baking powder if he does not eat it?

Mr. COYNE. I supposed that had been elucidated and explained to the satisfaction of the committee. In the use of alum baking powder for the purpose of leavening bread, there is a chemical reaction that takes place, and the chemical residue left—

Mr. ADAMSON. I did not ask you for a chemical disquisition, but it was my idea that the alum went into the bread.

Mr. MANN. You are not a bread maker, evidently.

Mr. TOMPKINS. It goes into the dough and there the change takes place.

Mr. MANN. It is not left in the bread when it is cooked.

Mr. COYNE. I supposed that you knew that.

Mr. ADAMSON. Do you not make bread with the dough?

Mr. COYNE. Yes, sir; but it is the baking powder which raises the bread and disappears.

Mr. ADAMSON. I have heard of these theories. That is not what I asked the gentleman.

Mr. COYNE. For the information of the gentleman upon my right, I will state that baking powder takes the place of the old elbow-grease proposition.

Mr. ADAMSON. It may be so intended, but it has never done it in practice.

The CHAIRMAN. You like Virginia biscuits?

Mr. ADAMSON. Yes, sir.

Mr. COYNE. In the use of baking powder you simply have the result of the use of baking powder, and you have no baking powder left.

Mr. MANN. What is the name of your company?

Mr. COYNE. The Seagull Specialty Company.

Mr. MANN. How much do you make?

Mr. COYNE. Six million pounds per annum.

Mr. MANN. How long have you been in business?

Mr. COYNE. Four and a half years.

Mr. MANN. We had before this committee in the Fifty-fifth or the Fifty-sixth Congress—I think it was in the Fifty-fifth Congress—representatives of the same association, the national association of alum baking-powder people, who protested that to label baking powder “alum” would absolutely kill the business.

Mr. COYNE. That is probably true as to one or two sections of the country. I do not desire to introduce a trade controversy before this committee; it might be tiresome to you. But I will state the manufacturers of cream of tartar powder have expended thousands and thousands of dollars every year, and they make constant efforts to create a false impression in the minds of the reading public as to the use of alum baking powder. They say to the consumer that alum is a bad thing to eat. In one or two sections the inroad on their trade by the use of alum baking powder has not been so pronounced as in other sections, and probably there is a large percentage of the reading consumers of those sections who think of alum as the crude crystallized alum that you buy in a drug store, the thing that puckers your mouth like eating an unripe persimmon. In those particular districts if we were obliged to put “Alum” on the can we might have to put a little more money in advertising.

Mr. ADAMSON. They do not all agree with you that alum goes out of the bread as it is done?

Mr. COYNE. Yes, sir; they all agree to that.

Mr. MANN. As I understood those gentlemen at that time, and there were several of them here representing this portion of the country in the trade, the statement was made then that to label the baking powder “Alum baking powder” would give the purchaser the idea that he was taking alum into his stomach, and would probably almost ruin the business of making alum baking powder.

Mr. COYNE. Well, the manufacturers have so long submitted to the creation of this prejudice that they should take their medicine now. We are willing to stand by it. You can not frame a bill that will please every manufacturer, and if you frame one that will protect the consumer your work will be well done.

Mr. MANN. As I understand the question the alum baking-powder people claim that the residue left in bread after the use of alum baking powder is not anything which affects the physical system at all.

Mr. COYNE. Absolutely not at all, sir.

Mr. MANN. And that the residue left from cream of tartar baking powder does affect the system.

Mr. COYNE. Well, that is true.

Mr. MANN. That is, it is a laxative, or something of that sort; has an affect upon the liver?

Mr. COYNE. To make it clearer, where cream of tartar baking powder is used the residue is Rochelle salts. In the case of alum baking powder it is hydrate of alumina. In the case of the former it is a laxative, which is not a very good thing to eat three times a day, and in the second case the residue from alum baking powder is a substance that passes through the system like the seed of a fig or grape.

Mr. MANN. There was at the time I speak of, in those hearings,

quite a controversy between the baking-powder people in reference to this; that is, the cream of tartar baking-powder people who are represented, I suppose, largely by the Royal Baking Powder Company, wanted the composition of the baking powder put upon the can. Now, what you want is to have the resultant put upon the can?

Mr. COYNE. Both.

Mr. MANN. You are willing to have the substance put upon the can, but you want the resultant put upon the can also?

Mr. COYNE. Yes, sir.

Mr. MANN. Is this a compromise which is agreeable to and approved by the manufacturers of baking powder now?

Mr. COYNE. Why, yes. And if you decide to eliminate the residue clause entirely, we will give your bill our hearty support.

Mr. TOMPKINS. Is there any need of legislation to enable you to put the residuum on the label?

Mr. COYNE. Any need?

Mr. TOMPKINS. Yes; can you not put it on there without legislation?

Mr. COYNE. Most assuredly, yes, sir.

Mr. TOMPKINS. They why do you not do it? Why do you ask that that shall be included in this legislation?

Mr. COYNE. For a most excellent reason. We do not appear before you entirely as philanthropists. The manufacturers of rival products—the cream of tartar powder people—are quite willing that we should be obliged to put "alum" on the can. That is a target for them to shoot at. They have created a prejudice against alum. They are willing to put cream of tartar on their can; that sounds good. They are unwilling to put Rochelle salts on it; that sounds bad. We are willing to put both the ingredient and the resultants on the can, let either sound as it may. Our position is entirely clear. We realize that the only possible way to settle this question (it may cause some temporary annoyance) would be to enact a stringent food law, disregarding the wishes of individual manufacturers, jobbers, and retailers entirely, thus accomplishing the object of pure-food legislation, viz, informing the consumer thoroughly regarding his purchases.

Mr. TOMPKINS. What is the resultant of cream of tartar baking powder?

Mr. COYNE. Rochelle salt.

Mr. TOMPKINS. That is what the consumer gets when he eats the bread?

Mr. COYNE. Yes, sir. If he eats hot bread three times a day he eats Rochelle salt three times a day. And in a loaf of bread made with cream of tartar baking powder the consumer will get 165 grains of Rochelle salts.

Mr. MANN. If he uses cream of tartar baking powder?

Mr. COYNE. Yes, sir.

Mr. COOMBS. You would not eat it three times a day?

Mr. COYNE. Yes, sir; they do in some parts of the country, three times a day—hot biscuit.

Mr. RICHARDSON. There was a gentleman testifying here yesterday who said that the alum baking powder had 86 per cent of the business of the country, and the others 14 per cent.

Mr. COYNE. The alum baking powder representative?

Mr. RICHARDSON. The alum baking powder. He said that the alum baking powder represents 86 per cent of the entire consumption of

the United States, and for very good reasons, because it was more wholesome.

Mr. COYNE. It is a wholesome product; strictly pure.

Mr. RICHARDSON. It is cheaper and more wholesome?

Mr. COYNE. Yes, sir; much more wholesome.

Mr. MANN. You should read an advertisement of the Royal Baking Powder Company if you wish to find out whether it is more wholesome.

Mr. TOMPKINS. Then your idea in regard to the resultant is that the manufacturer should be compelled to put not only the contents of the package on the can, but the resultant of the use of that package?

Mr. COYNE. Yes, sir: in order that the consumer may be thoroughly informed, in order that the legislation may accomplish its purpose and protect the consumer.

Mr. RICHARDSON. Now, I understand you to say that, regardless of the manufacturer or consumer, a pure-food bill ought to be a stringent, drastic measure, and ought to be enacted?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. Now, are you not apprehensive in regard to the practicability of labeling the articles with every ingredient that goes into it—every article of food? For instance, take what we were talking of yesterday—a barrel of vinegar. It has certain elements in it, and coloring matter, and other things, various things, all of which are wholesome. Now, the merchant can sell a pint of that. Do you think that he ought to label that as to just what is in it? Would not that be impracticable?

Mr. COYNE. No; not at all. There is no manufacturer who does not know exactly what he puts in his product.

Mr. RICHARDSON. I know that he knows, but when you come to sell to the ordinary masses of the people, and in small quantities, and when you come to putting a label on each pint that you send out, do you think that can be accomplished?

Mr. COYNE. Most assuredly, sir.

Mr. RICHARDSON. Would it not hamper honest and fair trade and be an obstruction to it?

Mr. COYNE. Not in the least, sir. You can not accomplish the purpose of this legislation unless you make it restrictive.

Mr. RICHARDSON. Then you do not believe that the object of a pure-food law can be attained merely by confiscating the article of food?

Mr. COYNE. Not at all, sir.

Mr. RICHARDSON. You believe that the penal part of it, and putting a punishment upon a man, will not accomplish the object?

Mr. COYNE. I believe that a man should be made to fear the law. He will not fear it if his adulterated goods are confiscated.

Mr. RICHARDSON. You do not think that he would fear it if his reputation was involved alone?

Mr. COYNE. The manufacturer of an adulterated food product has no reputation to lose.

Mr. ADAMSON. Confiscation would be in the nature of a fine?

Mr. COYNE. Yes, sir. To show you the futility of the confiscation of adulterated goods, I would say that they have a very small value. We will assume that the manufacturer markets some goods in New York State and they are confiscated. Printing is cheap. He can put out the same class of goods in another State, under a different label,

and make considerable profit before they are confiscated. It is not a sufficient penalty. It will not prevent—

Mr. RICHARDSON. Do you not believe that if a manufacturer who is engaged in the manufacture of these articles of food has his goods arrested and confiscated, and it is published throughout the country that this has been done, that that would affect the sale of the articles of that manufacturer?

Mr. COYNE. Only in a very slight degree. I can cite you an instance on record right now. The chemist of some bureau in Connecticut made an analysis of some 24 or 26 products that were brought before him, and one was found to contain a harmful adulterant, and a bulletin was issued on the subject, and the adulterant itself was photographed, and that was circulated throughout the country broadcast. That was a year ago. Within the past seven weeks more than two tons of that same product was confiscated in a store in New York, and the manufacturers are still selling the same goods in other States. Confiscation will not cure the evil.

Mr. MANN. As a manufacturer yourself, manufacturing a large quantity of baking powder; which would you rather have, that the Government should confiscate all that you have on hand, or fine you \$100?

Mr. COYNE. I would prefer confiscation.

Mr. MANN. Your goods would be worth less than \$100?

Mr. COYNE. I would not contemplate goods subject to confiscation as being worth anything.

Mr. MANN. Take your goods—the goods that you make under this law, as you now make them—should they be liable to fine or confiscation—

Mr. COYNE. You ask whether I would prefer confiscation or a fine of \$100?

Mr. MANN. Yes.

Mr. COYNE. That would depend on the quantity of goods confiscated.

Mr. MANN. You know the quantity of goods you have on hand; I do not. Take the amount of goods that you have on hand as a manufacturer at any time; which would you prefer, a fine of \$100 or a confiscation of your stock?

Mr. COYNE. I would prefer the fine; but the Hepburn bill contemplates imprisonment.

Mr. MANN. That is never done.

Mr. COYNE. What?

Mr. MANN. That is not often done. As between a fine of \$100 and confiscation, I simply wanted to get at which would be the greater loss.

Mr. COYNE. The confiscation would be a greater loss than a fine of \$100. But would the manufacturer's goods be subject to confiscation before they were marketed?

Mr. MANN. Certainly.

Mr. COYNE. In that case I would prefer a fine of \$100.

Mr. MANN. As to the alum baking powder companies, is there a combination?

Mr. COYNE. No, sir; there is no combination, but there is an association.

Mr. MANN. Are you a member of that association?

Mr. COYNE. It in no way controls prices, or regulates trade.

Mr. MANN. Are you a member of that association?

Mr. COYNE. Yes, sir.

Mr. MANN. And do you speak for the association?

Mr. COYNE. Yes, sir; I am one of the committee appointed to come to Washington to try to secure the passage of the Hepburn bill.

Mr. MANN. Do I understand, then, that the alum baking powder people have changed front? Previously they were here opposing what is known as the Hepburn bill, and now they are favoring it.

The CHAIRMAN. I think you are mistaken about that. The argument made here before was against the putting of the word "alum" on the label. The gentleman that made that argument then insisted, as he does now, on putting on the can the residue that is left in the completed bread. I think their position was just the same then as it is now.

Mr. MANN. My recollection is that they were opposing the passage of the Brosius bill. I do not think I am mistaken about that. They did not want to put on the word "alum." They were perfectly willing to put on the resultant, but they said that what was in the baking powder made no difference to health, because it all went off in gas, and that what was left was what the people should know. I think that at that time they were opposed to the passage of the Brosius bill.

The CHAIRMAN. They were contending for this same amendment. It was not in the bill at that time.

Mr. MANN. That may be. What I wanted to ascertain is whether these same people who were then before us opposing the bill as it then stood are now in favor of it as it now stands.

Mr. COYNE. We are quite willing, sir, to put both the ingredients and the resultant on the package.

Mr. MANN. I understand your position in the matter.

Mr. COYNE. In the wisdom of the committee.

Mr. MANN. I understand your position in the matter, but what I wish to ascertain is whether you speak for the alum baking powder people as the other people claimed that they did at that time?

Mr. COYNE. I speak for the entire trade when I say that we are entirely willing to put on the ingredients and the resultant.

Mr. MANN. You said that one reason for that was because of State legislation. Of course, we understand that in some States there is severe legislation aimed at the alum baking powder, and I judged from your remarks that that might be one reason why you wish national legislation. You understand, of course, that this bill, if enacted into law, will not affect that legislation at all.

Mr. COYNE. No; it will simply be a guide, though. It seems reasonable to assume that State legislatures will be more or less guided by national legislation, and we think that will be the ultimate result.

Mr. MANN. You have been in a constant fight with the cream of tartar baking powder people, have you not, before the different State legislatures?

Mr. COYNE. Yes, sir.

Mr. MANN. And in the courts?

Mr. COYNE. Yes, sir. We have been on the defensive for many years.

Mr. MANN. And you think now that you are willing to put on the can that your product is made from exsiccated alum?

Mr. COYNE. The ingredients and the resultant.

Mr. MANN. Do you put the word "alum" on any of the baking powder that you put out now?

Mr. COYNE. No. But we very frankly admit, and boast of the fact, that we manufacture a straight alum baking powder.

Mr. MANN. Yes. Why do you not put that on the can?

Mr. COYNE. My statement here will be circulated as an advertisement by the opposition everywhere.

Mr. MANN. I think they would have hard work making anything out of your statement here, because I notice that there has not been much said, and no occasion for you to say much. Why do you not put it on, now?

Mr. COYNE. It would serve no good purpose.

Mr. MANN. You want a bill to require you to put the word "alum" on. Why do you not put it on when you are not required to?

Mr. ADAMSON. It is the other fellow that you are after?

Mr. COYNE. No, sir; we do not like the other fellow to be after us.

Mr. MANN. You are asking a certain law to require you to put a certain label on your goods. Why do you not put it on now?

Mr. COYNE. We would have to voluntarily print a lot of new labels.

Mr. MANN. Why do you not do it voluntarily?

Mr. COYNE. In the meantime we reduce our supply of labels.

Mr. MANN. Is that the only reason for not putting "alum" on the baking powder label, that you have a large supply of labels on hand?

Mr. COYNE. I think you can answer the question by the question that you have put to me. We admit that there has been a great prejudice created. We do not care to voluntarily invite or encourage that sort of prejudice. But we say that if food legislation is necessary, and we believe it is, and the people want it, then make it stringent, and we will stand by it, and we will take our medicine.

Mr. MANN. You are willing to enter upon a propaganda to show the people that you are right. I do not see why—

Mr. TOMPKINS. I understand that he wants the other fellows to be required to publish the same thing because in the case of the alum baking powder the resultant is a harmless substance—I do not recollect the exact substance now—whereas in the case of cream of tartar baking powder the resultant is Rochelle salts?

Mr. COYNE. Yes, sir.

Mr. TOMPKINS. Now, you are willing to offset Rochelle salts with alum and alum with Rochelle salts, on the different cans containing baking powder.

Mr. COYNE. With this object in view: It furnishes complete information to the consumer.

Mr. RICHARDSON. Why do you want to get the help of the law when you have 86 per cent of the business now as against 14 per cent? Can you not whip out 14 per cent with 86?

Mr. COYNE. Commercially, we have already won the fight.

Mr. ADAMSON. Why are you not willing to quit, then?

Mr. RICHARDSON. If your goods are pure and wholesome, why do you not content yourselves as it is?

Mr. COYNE. Because we want these strike bills to stop appearing in the State legislatures.

Mr. RICHARDSON. Within a few years you are going to get rid of that 14 per cent?

Mr. COYNE. We think so.

Mr. ADAMSON. Are you not willing to take your chances?

Mr. COYNE. Yes sir; we would not be willing to put the resultant and the ingredients on the cans if we were not willing to—

Mr. ADAMSON. If you were sure of the State legislatures you would not ask for national legislation at all?

Mr. COYNE. Yes, sir. We think the food law should protect the consumer. I think the food law should cover all the ingredients of all products. I do not think any single industry can be singled out, and I state that in all honesty and sincerity. It may seem strange to you.

The CHAIRMAN. What relation does baking powder have to flour and meal throughout the United States—what moneyed relation?

Mr. COYNE. I could not answer that offhand, sir.

The CHAIRMAN. You can approximate it, can you not, sir? A gentleman gave us some statement here day before yesterday—Saturday, I think.

Mr. COYNE. Moneyed values, you mean?

The CHAIRMAN. Yes; the proportion.

Mr. COYNE. No, sir; I could not answer that question. I am not up on it.

The CHAIRMAN. Is it a very large proportion?

Mr. COYNE. Yes, sir; very large.

The CHAIRMAN. Are there any chemical changes in the qualities of the flour by baking.

Mr. COYNE. I expect there are. I can not answer that intelligently. I think there are some chemical changes that take place in the baking of flour.

Mr. MANN. The Hepburn bill reads:

That substances which enter into the preparation or preservation of food which change their chemical nature in the preparation of food shall be branded at the time of manufacture with the names of the resulting substances which are left in the food produced when ready for consumption.

Mr. COYNE. Yes, sir.

Mr. MANN. Now, under that all the baking-powder man would have to put on would be "bread."

Mr. COYNE. The bread is the food. It says, "the resulting substances which are left in the food."

Mr. MANN. It says substances which enter into the preparation or preservation of food which change their chemical nature in the preparation of food, and that covers all goods that are manufactured containing flour or oatmeal or anything of that sort, and you would be required to put on the chemical analysis of the bread when manufactured, or else simply say "bread."

Mr. COYNE. In answer to that, we will say that if it seems impracticable to the committee to make that a general provision, let it cover baking powder anyway. Change the wording of this so that it will read "that baking powder which enters into the preparation of food," and so forth. Confine it to that specific article, if you like. You are perfectly welcome to do so.

Mr. MANN. The question with me is whether it is practicable in the form that it is in, and whether it would accomplish the results you want.

Mr. COYNE. So far as baking powder is concerned, I will say that no manufacturer of baking powder is ignorant of the resulting substance in the food from the use of his baking powder.

Mr. MANN. The main resultant substance from the use of baking powder is raised bread.

Mr. COYNE. Very well, sir; insert the words "principal resulting substance."

Mr. MANN. The principal resulting substance is not the chemical quality that is left; it is the raised bread.

Mr. COYNE. Yes, sir; but it says "the resulting substances which are left in the food." The bread is the food.

Mr. MANN. It is all a part of the food.

Mr. COYNE. It is the food proper.

Mr. MANN. It is all a part of the food. It is all together as part of the food.

Mr. DAVIS. Mr. Adamson's proposition is right after all; it does not all disappear. There is something that is left in the bread.

Mr. MANN. The proposition was that it was all left in the bread.

Mr. COOMBS. Chemically speaking you do not speak of a resultant substance?

Mr. COYNE. It would be called a substance.

Mr. COOMBS. Chemically speaking?

Mr. COYNE. There would be no result if it was not a substance.

Mr. COOMBS. That may be true; but is that the chemical term? Do you style this a resultant substance?

Mr. COYNE. It may be partly a commercial term. I am not a chemist.

Mr. COOMBS. Nor am I. I simply inquired.

Mr. COYNE. I hope I have made the position taken by our company entirely clear to the committee. We ask the most stringent pure-food measure which you can enact, and we ask that the residue clause be retained in the bill, for the reason that it gives full and complete information to the consumer, and accomplishes the full purpose of pure-food legislation.

Mr. MANN. In any of this prepared food that is sold under specific names is there any baking powder or not?

Mr. COYNE. Prepared food? I do not know of any prepared food except self-raising flour that contains baking powder.

Mr. MANN. That is a rival to your business?

Mr. COYNE. Yes, sir; to some extent, but very slightly. It does not amount to anything.

Mr. MANN. Is it practicable to label that with the resulting substance?

Mr. COYNE. I should say that was very practicable.

Mr. MANN. What would be the resulting substance in self-raising flour that was cooked?

Mr. COYNE. I should think that the resulting substance would be the same as that contained in bread in which baking powder is used. That could be easily gotten in the case of bread made with flour with baking powder added afterwards.

Mr. MANN. The chemical analysis would not mean anything to the purchaser?

Mr. COYNE. Yes, sir; I should think it should be very intelligible.

Mr. MANN. Did you ever hear what the chemical analysis of bread is?

Mr. COYNE. No, sir.

Mr. MANN. How do you know that it would be intelligible? Most

of us are not intelligent enough to know what the figures of chemistry mean in everyday life.

Mr. COYNE. They would be there; and everyone could read.

Mr. MANN. But in chemical formulæ.

Mr. TOMPKINS. They do not put Rochelle salts in that form.

Mr. MANN. I do not think they would put Rochelle salts at all. They would either say "bread" or they would have to put the chemical analysis in.

Mr. MANN. Do you know anything about the number of tons of baking powder consumed in the United States annually?

Mr. COYNE. It is approximately 100,000,000 pounds or 110,000,000 pounds.

Mr. MANN. Between 100,000,000 and 110,000,000 pounds?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. Now, I would like to have you give me some information. You say that the resultant in the use of cream of tartar baking powder is Rochelle salts.

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. Now, does the other part of the Rochelle salt pass away in evaporation in cooking? There is something in the Rochelle salts besides the resultant?

Mr. COYNE. There is no Rochelle salts in the baking power.

Mr. RICHARDSON. What is there? The Rochelle salts is a resultant of the cream of tartar powder?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. And cream of tartar is put in there; and does the balance of the cream of tartar pass away in evaporation in the cooking? There is something else in there.

Mr. COYNE. The cream of tartar in a pound can of baking powder will deposit a certain percentage of Rochelle salts. In the process of baking the cream of tartar passes away.

Mr. RICHARDSON. What is the chemical analysis of cream of tartar?

Mr. COYNE. Cream of tartar is the commercial name for bitartrate of potassium.

Mr. RICHARDSON. And when you put that in the bread and the cooking process takes place the resultant is—

Mr. COYNE. It changes it to Rochelle salts.

Mr. RICHARDSON. It is Rochelle salts?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. And the resultant is brought about by the evaporation of whatever else is there by the process of cooking; is that it?

Mr. COYNE. Yes sir; that is it.

Mr. RICHARDSON. It goes away or what is done with it?

Mr. COYNE. I am not chemist enough to tell you.

Mr. RICHARDSON. I am not much of one either.

Mr. COYNE. The gas rises and leaves the bread aerated.

Mr. RICHARDSON. Then the rising of the bread comes from putting the cream of tartar in it; is that it?

Mr. COYNE. Yes, sir; in combination with soda.

Mr. RICHARDSON. The operation of the gas during the process of cooking?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. And that leaves an injurious resultant in the bread—Rochelle salts?

Mr. COYNE. Yes, sir.

Mr. RICHARDSON. Well, that is what I am trying to get at.

Mr. COYNE. Yes, sir; that is right.

I thank you, gentlemen, for your kindly attention.

Thereupon at 12 o'clock m., the committee adjourned until to-morrow, Wednesday, March 19, 1902, at 10.30 o'clock a. m.

MARCH 19, 1902.

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

STATEMENT OF MR. B. J. HOWARD, MICROSCOPIST IN THE BUREAU OF CHEMISTRY, DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

The CHAIRMAN. Mr. Howard, are you familiar with the provisions of House bill No. 3109, known as the Brosius pure food bill?

Mr. HOWARD. I have not examined the bill itself. I have come before you this morning primarily to make some statements in regard to examinations of certain foods, some samples of which we have recently examined from the microscopical standpoint.

Since the development of the microscope and its finer adjustments, the microscope has come into very much larger use, and in the field of analysis of foods we find it a very handy adjunct to chemistry work.

The plants which are used as foods having primarily characteristic structures, we can always determine the different orders of plants, if not in most of the cases the individual species. Last fall, in connection with certain of our work, we took up certain investigations regarding the analysis of fruits, and the identification of fruits in mixture of those different kinds, and the fruits which we worked on very largely were the larger fruits, such as the quince, the pear, the apple, and the apricot, and we found from our own work done that we were able to make out and distinguish these different kinds of fruit when mixed together.

Along the same line of microscopical work there has been more or less work done by Marpmann in Germany and Malfatti and some others, but their work has been more or less confined to the smaller fruits, such as we commonly call berries—strawberries, raspberries, and currants, and other small fruits—and from the seeds of those plants we can very readily distinguish the different kinds when mixed together. In some samples which we had very recently to examine, we found in the mixture when it was presented to us fungus plants, such as we ordinarily call the black molds of bread, or belonging, at least, to that class of plants.

The mycelium, which corresponds to roots in representatives of the higher orders of plants, I found had penetrated through the fruit coats, showing that the work had been done before the plant had been put up in preserve form. And furthermore, the fruit, after it had been put up, had undergone no decomposition so far as the microscope could reveal, this mycelium or fiber passing through the tissue being in all parts of the preserves.

These samples I have here are duplicates of the samples then examined, and the one which we found the worst and having the greatest

quantity of mycelium, was one labelled the same as the one we have here [indicating], and bought at the same place and bearing the same kind of labels. That was found to have a very large amount of mycelium, and not only the mycelium as such, but also the ripened sporangia, and in those sporangia were not infrequently the ripened spores and also other empty sporangia. The sporangia are the little globes in which the spores are produced and which ripening give the molds a dark, black color. These little sporangia finally burst open and the spores escape. In some of the samples which we have, taken from a sample the duplicate of those that we have here this morning, there were not only the ripened spores and sporangia, but also sporangia had burst open and the little spores had escaped, showing that they were in a far advanced stage of development.

I have here a photograph taken of one of those cases, showing the little sporangia with the mycelium passing in various directions, and also we have here one in which the mycelium has penetrated through the outer coat for the purpose of taking its nourishment from the plant.

Such cases as that of fungus growth, and especially of that kind of fungus, do not take place except in the case of decomposition of the fruit.

Then another fact which was noted, and which I shall call to your attention, was the presence of immense numbers of yeast cells. This seems to make the case even worse than the first, inasmuch as decomposition not only had taken place, but fermentation had begun before the plants had been preserved and put up, since these plants, the fungus, and the yeast will not grow under the conditions of sweetness which we usually find in preserved fruits.

And another thing showing that those cells had developed before the fruit had been put up is the fact that in almost every case the yeast cells were in twins. In the yeast, as it ordinarily occurs, there are chains of cells, sometimes eight or ten of these little oblong egg-shaped bodies, joined end to end; but in the preserving process these chains had all been broken up, and here we have samples of yeast cells, usually composed of the little tiny cell at the end—the last cell grown—attached to one other.

Then wondering furthermore in regard to this abundance of yeast and mycelium, we have secured from time to time various specimens of fruit products, especially the berries, and we find that there is but very little, if any, of the mycelium and the yeast present in the good and perfect fruit. This would indicate that those growths are on those specimens, just as I said before, in which decomposition has begun and fermentation has followed the decomposition.

Mr. MANN. Do you mean by that that in order to have these manifestations, taking, for instance, apples, that the apples would have commenced to rot?

Mr. HOWARD. There must be more or less of rotting and decomposition, and if there is yeast present it indicates not only decomposition but a fermentation, because we know that in cider and in ordinary samples of that kind—the juices of fruits—that fermentation does not begin until yeast is present, which is usually shown by the evolution of carbon dioxid and alcohol.

The plates I have here [indicating] are some plates I referred to a moment ago, which were prepared in our investigation last fall, show-

ing the elements that are abundant and are more or less characteristic of those larger fruits. Coupled with these characteristics we have used in some cases chemical tests; in others other cells besides the ones represented here. Those plates have not arrived at our office yet, and so I have been unable to bring those this morning.

The CHAIRMAN. Well, now, when you find these conditions, what do you argue as to the value of the food—that article of food?

Mr. HOWARD. We argue that in that condition it is an unwholesome food, though it may not be actually poisonous. Some fungus growths, of course, are very poisonous, but those which we have here are not, I think, so considered—the same as moldy bread is not considered a good article of food. These fruits, containing as they do large quantities of fungus, show that the fruit had gone to an extreme condition of decomposition and fermentation before the fruit was ever put up.

Mr. MANN. Well, do you find that these fungus growths are living, those that you have there?

Mr. HOWARD. No, sir.

Mr. MANN. I mean the ones you refer to.

Mr. HOWARD. Those there [indicating] are not living, since in the boiling and putting up and preserving process they have been killed.

Mr. MANN. Then, is there any deleterious effect from them after they have been killed?

Mr. HOWARD. I would not consider that as wholesome food, and I do not believe any botanist or chemist would consider it as wholesome, although, as I say, it may not be positively poisonous, in that sense. We have common poisons that act very slowly on the system, taking weeks and weeks to produce any perceptible effect; and in such quantities as we have here there is no doubt in my mind that more or less of this might be taken, and perhaps large quantities, without ever having any noticeable effect on the system.

Mr. MANN. The fungus plants themselves are dead?

Mr. HOWARD. They are dead; yes, sir.

Mr. MANN. Is there a resultant poison from them which is deleterious?

Mr. HOWARD. I can not say definitely in regard to these fungi, but I know in certain kinds there are.

Mr. MANN. If there is not a resultant poison, how would it be injurious to health?

Mr. HOWARD. Because you may have certain chemical compounds there other than real poisons as such that, by reason of an admixture and dilution, may produce an evil effect.

You take water and mix it with milk and the milk does not become poisonous, but it becomes decidedly inferior to the original article; and that is my contention, that such things indicate a condition of the fruit which is unwholesome. As to a decomposed fruit, there is no question about that being a poor article of food.

Mr. MANN. It may not be a pure article of food, but I wanted to ascertain, if I could, whether the substance resulting from the fungus growth itself was injurious to health.

Mr. HOWARD. I can not say in regard to this individual fungus. I simply state that there are certain species that would result in and have deleterious effects.

Mr. COOMBS. What is the effect when it is exposed to the air?

Mr. HOWARD. Of the fungus?

Mr. COOMBS. Yes.

Mr. HOWARD. There is no effect, so far as I know, except the drying up of the cells. The cell walls are not composed of true cellulose, but of what is known as semicellulose, which is a modification of the cellulose, and chemically acts very differently.

The CHAIRMAN. You have two or three times used the word "poison." What do you mean by your use of that word?

Mr. HOWARD. I have used the word "poison" this morning as indicating a substance which is more or less active in destroying, or abating and destroying, life in a body. As to the term "poison," its definition from a scientific standpoint is one very difficult to give, because, as I said a moment ago, there are certain poisons that are considered at present as poisons that act only after long weeks, and after a great quantity has been added to the system. In other cases poisons may be very quick in their activity, as we find in the case of prussic acid.

There are one or two other samples I might speak of in this connection; one of pineapple, which I have here [indicating sample]. A sample of that was taken and the sirupy matter was removed by washing, and the substance remaining, which is practically the pulp of the material, was weighed, and from that weighed amount 60 per cent could definitely be assigned to portions of the periphery of the fruit, less than a quarter of an inch from the outside, showing that at least 60 per cent of the fruit used in the manufacture of this product was of that fibrous portion which comes from the outside of the fruit, less than a quarter of an inch from the surface. As to the remaining 40 per cent I was in doubt, because it was so finely divided that I could not, without a great deal of trouble, assign it to any definite part.

The CHAIRMAN. What is the effect of that on the value of the food?

Mr. HOWARD. It is about the same as mixing straw in with good pineapple. It is mostly composed of tough fibrous material. It is indigestible and passes through the system undigested.

The CHAIRMAN. You speak of this being unwholesome. You mean it is not as rich an article of food, or is it injurious to health?

Mr. HOWARD. It may be either. In the case of decomposed fruit, I think that it is usually believed by analysts that decomposed fruit in itself may have and usually does have certain substances—what those substances are I am not prepared to state, but we do have in decomposed fruit certain decomposition substances—which are themselves injurious, aside from these other substances, the molds and yeast which we have spoken of.

Mr. MANN. You spoke of the pineapple on the same basis, as though it had so much straw in it.

Mr. HOWARD. Yes, sir. In that the part of the fruit used was of an inferior portion, having a much larger amount of indigestible tissue than is usually expected by the purchaser.

Mr. MANN. Do you think that the more concentrated food is, the better it is; that there should be no coarse food?

Mr. HOWARD. No, sir; but we do not consider that material that is so largely indigestible should be sold to us as a more digestible article.

Mr. MANN. I understand that; but what I wanted to know was whether it was injurious to health.

Mr. HOWARD. Well, I stated that to the extent of my knowledge it is injurious, simply from the standpoint that straw would be, mixed

with foods; that it decreases the normal amount of digestible substance. It may pass through the body and may not in itself cause death; but it is not a good, wholesome food.

Mr. COOMBS. I was not here when you first started, and I would like to ask you a question. Do you think that there are food products prepared and put up that are any more deleterious, or injurious, you might say, to the health than the water that you get at the hotels every day?

Mr. HOWARD. As far as that is concerned, I think the water we are commonly getting is pretty apt to be considered deleterious too, when we have such amounts of clays mixed in with it.

Mr. RICHARDSON. You mean the water that we have been getting here in Washington lately?

Mr. MANN. Or that you get in any other large city.

The CHAIRMAN. Huntsville, for instance?

Mr. RICHARDSON. We get it mighty pure there. It comes out of the ground in the form of a spring, the largest in the world.

The CHAIRMAN. I am familiar with it.

Mr. RICHARDSON. But Congress ought to do something about the water that we are getting here.

Mr. MANN. Was there any chemical analysis of this fruit that you referred to with the fungus growth in it?

Mr. HOWARD. I believe there was, but I am not prepared to give you that analysis, since the samples were simply turned over to me by Dr. Wiley to be examined microscopically.

Mr. MANN. I did not know whether there had been any analysis, and whether it showed any poisons.

Mr. HOWARD. I am certain that there have been analyses made, but I do not know what they are or what they show. I think Dr. Wiley will probably refer to the samples when he comes before the committee to-morrow; but I simply state the microscopical side, and whatever there is on the chemical side of it is mostly out of my range, since I do not do any of that line of work in connection with my examinations.

Mr. MANN. Do I understand from you that the fungus growth that you found evidences of in these preserved fruits was in the fruit before it was preserved?

Mr. HOWARD. Before it was preserved.

Mr. MANN. It must have been in the fruit before it was picked.

Mr. HOWARD. No, sir; not necessarily before it was picked. If it was in that condition, the chances are three to four that the fruit would have been discarded at once. The fruit placed in the boxes had been allowed to lie there in the heat, or otherwise, until this fungus developed. The time required for the fungus depends upon temperature very largely. Some forms are developed in twenty-four to forty-eight hours. In the series of samples which we examined of fruits that were undoubtedly first quality, of the preserved and marked specimens, out of eight samples I found very little and in some cases none at all of these fungus and yeast forms which I have mentioned.

Mr. MANN. You spoke of finding a fungus growth—mycelium—in the fruits, the apples, etc., and I understood you to say that they had penetrated through the skin on the tree.

Mr. HOWARD. Not on the tree. The mycelium is a growth that penetrates the tissues, and that penetration usually follows or accompanies decomposition. There are certain fungus growths which flour-

ish upon some fruits, upon trees, or upon the living tissues of other parts; but the fungi which we have shown here this morning are not of that kind. They are a kind that live upon decomposed fruits, and the yeast is the basis of ordinary fermentation.

Mr. MANN. This fungus growth that gets in the sound apple, is that deleterious to health?

Mr. HOWARD. I am not aware that there is any fungus in sound apples.

Mr. MANN. I understood you to say so.

Mr. HOWARD. No, sir; I am not aware of any fungus that penetrates into the inside of the apple—of the living and good apple; and this sample of fungus which I had here this morning was a fungu-taken from a berry, and the berries are very susceptible to fungu-growth, since they soon begin their decomposition, and that of course prepares the way very quickly—twenty-four to forty-eight hours is often sufficient for the spores to begin their work and to, in some cases, bring on quite a development. Yeast will develop within twenty-four hours in quite large quantities, but no fruit that I know of, except it were kept under the most trying circumstances of temperature, would develop any such quantity of fungi as we have here shown.

Mr. MANN. Did you not say that your department had given its principal attention to the larger fruits, and not the berries?

Mr. HOWARD. I said my work last fall was largely confined to them.

Mr. MANN. Do you find fungus growths in those larger fruits except when they have commenced to—

Mr. HOWARD. No, sir; we find none at all.

Mr. COOMBS. There is none in the developing stage of the fruit?

Mr. HOWARD. None in the developing stage. Such growths are poisonous to plants, and often kill the cell growth. Such cases, where the funguses do grow, are investigations lying in the range of the plant physiologist and pathologist, and not of the chemical microscopist. He finds that they develop there in the living cells, but sooner or later the cells die or else develop an abnormal growth, such as we see in galls on the trees—

Mr. COOMBS. Is there any fungus growth in a wormy apple, ordinarily?

Mr. HOWARD. Not unless it has come in as a fungus, passing into the parts that the worm has affected, and I have never found, even in that case, anything—

Mr. COOMBS. Is not the worm in the apple a development, like the silkworm—which is a development, is it not, from something else; the moth, for instance, will lay its eggs, and then the worm is the development from the egg?

Mr. HOWARD. Yes, sir; of the egg. But the worm has nothing to do with the fungus or the fungus with the worm.

Mr. MANN. Except that the worm would leave an opening or hole that it came out of.

Mr. HOWARD. It would leave the tissue in a dead condition, and make it susceptible.

Mr. COOMBS. A good healthy worm is not bad anywhere?

Mr. HOWARD. What is that?

Mr. COOMBS. A good healthy worm in cider, for instance, is not bad.

Mr. MANN. That is what gives the flavor to cider.

Mr. HOWARD. I suppose you would get a good deal of flavor from worm juice.

Mr. MANN. Is that yeast growth healthy or unhealthy?

Mr. HOWARD. It is simply, as I said before, a sign of fermentation taking place in some kind of plant juice.

Mr. MANN. What kind of yeast is it they put in whisky to give it its flavor?

Mr. HOWARD. I can not tell you.

Mr. MANN. I understand in all the large distilleries they put in some kind of yeast plant in whisky.

Mr. HOWARD. They put in the yeast to bring about a fermentation. It is the fermentation they want which produces the alcohol.

Mr. MANN. They put in the yeast for the purpose of having a living bacilli there, so the distillery men tell me. I do not know.

Mr. HOWARD. The bacilli are a still lower form of plant than the yeast, which produce as by-products certain enzymes known to botanists and chemists as well, and these enzymes and other products which the plants give off may give a certain flavor to the whisky or the wine or whatever the product is.

Mr. RICHARDSON. Do they not make whisky without putting that yeast in it?

Mr. HOWARD. I think they have to have the fermentation first, and then the whisky, I believe, is a distilled product. Dr. Bigelow can tell you more about that than I. That comes under the work of the chemist again and in the line of work that I am not so familiar with.

Mr. RICHARDSON. In the ordinary distillation of whisky do they not have what is commonly called the mash, which contains yeast?

Mr. HOWARD. Because there is present the yeast that has come in accidentally or has been put in in small quantities. You may place on the table a dish of the mash which has been sterilized by heat till every germ present has been killed, and then if it is left here in this room for a few hours you will find yeasts and molds growing in abundance. They will settle on the surface of the liquor and start up a fermentation growth.

Mr. RICHARDSON. Then you draw it off?

Mr. HOWARD. It may be drawn off, but it has to go through other processes.

Mr. RICHARDSON. To go through the worm?

Mr. HOWARD. Yes, sir. But I believe there are none of the yeast germs shown in that fermented liquor, since the fermentation is followed later on by distillation, which carries over the liquor and leaves the germs behind. In the case of a beer which I examined a short time ago in which yeast was mistrusted to be present, none was found.

Mr. MANN. Is there any other way of determining whether this preserve here is perfectly wholesome except by a microscopical examination; that is, is there any way of ascertaining whether there had been fungus growth in the fruit, except by a microscopical examination?

Mr. HOWARD. I do not know of any other at present. There may be delicate tests which lie beyond the use of the ordinary chemist which may be used, but they would require such refinement of operation that the ordinary chemist in the analytical laboratory never makes use of them.

Mr. MANN. How can this be made of practical utility? How will you reach this unwholesome product and prevent it?

Mr. HOWARD. By requiring the use of wholesome fruits at the start.

Mr. MANN. Do you mean to have an inspector examine each berry?

Mr. HOWARD. I am not here to state that part—the legislative side of the question.

Mr. MANN. Is there any other way of doing it?

Mr. HOWARD. I don't know. The berry samples which I have here, and which were all put up by the same firm, all showed more or less of that yeast and a great deal of mold, not less than one hundred times as much mycelium and yeast shown in any other of those samples which I stated are considered first-quality products.

The CHAIRMAN. Mr. Howard, in these specimens where you found yeast and fungus, would you have hesitated to use those specimens as food?

Mr. HOWARD. Yes, sir, I should.

Mr. MANN. Take, for instance, a case—I suppose that they have the same sort of cases elsewhere, but in Chicago or in South Chicago, where there is an immense amount of fruit sent in all the time.

Mr. HOWARD. Yes, sir.

Mr. MANN. Of course berries, as we all know, do not keep more than a day or two—two days—and I have no doubt that often they gather up the fruit that is practically spoiled, and for aught I know they make fruit jellies and preserves out of it. Do you think that the product made in that way is decidedly unwholesome?

Mr. HOWARD. I should not use it for my own family.

Mr. MANN. After it has been subjected to great heat, so that the life itself is destroyed, it still leaves an unwholesome and injurious food product?

Mr. HOWARD. It is not primarily, gentlemen, a question of the yeast being there, further than as showing a preceding condition in the fruit itself—that the fruit itself had decomposed and fermentation had begun; and if decomposed fruit is unwholesome, if a rotten apple or a rotten berry as brought here into the room may be unwholesome, and we discard them from our own family use, then we have no reason for using such fruit in preserved form. Though all life may be dead, yet the preserving process keeps practically all the properties there, with the possible exception of some little alcohol being removed. So I say again that primarily, in my mind, it is not whether that fungus is in itself poisonous, or whether the yeast in itself is poisonous, but it shows a condition of the fruit which in itself makes it unwholesome, though sold as "fresh fruit."

Mr. MANN. I have been helping to can and preserve fruits always ever since I was a few years old, and I know from practical experience that it is a very common thing in households, where a can of fruit commences to ferment, to take it out and recook it; a very common thing with preserves that they should commence to ferment, and they are put on the stove and reheated. Now, do these preserves still remain unwholesome after the fermentation has all been cooked out of them?

Mr. HOWARD. I should say it is not as wholesome as it was at the start.

Mr. MANN. Do you think it is unwholesome? It is the same case you have referred to.

Mr. HOWARD. In a way it is, and in a way it is not, since your fermentation there, as you notice it in the household, in most cases has not gone to the extent that this other must have gone; and furthermore, we have a fungus here which shows not only fermentation, but decomposition.

Mr. MANN. I have frequently seen cans of fruit that would blow the top off from fermentation put on the stove and recooked, and I have eaten that, and I want to know whether I am eating unwholesome fruit in such a case as that.

Mr. HOWARD. I should not consider it unwholesome in comparison with such fruit as this [indicating].

Mr. MANN. Wholesomeness is not a matter of comparison. Is it unwholesome; is it injurious to health?

Mr. HOWARD. I can not state that definitely in just that way, because as I understand these terms they are largely comparative.

The CHAIRMAN. Take an apple jelly made completely from rotten apples which are discolored, shrunken, made in the ordinary way, and extreme heat is applied; now, is that product, in your judgment, unwholesome?

Mr. HOWARD. I think it is.

The CHAIRMAN. After that process?

Mr. HOWARD. I think it is. There is no doubt in my mind whatever that such a product is unwholesome, because in that decomposition, to the extent that you have mentioned, there undoubtedly have been formed from the breaking down of the cell tissues products that are toxic in effect.

The CHAIRMAN. That could not be eliminated by heat?

Mr. HOWARD. No, sir.

Mr. COOMBS. Then it is a matter of degree, that wholesomeness in food?

Mr. HOWARD. I think so. As I stated in regard to poisons, some chemicals are considered poisonous and some are not considered poisonous. Some plants are poisonous to one person and not poisonous to others; poison ivy is an example of that.

Mr. COOMBS. You have seen mince-meat put up in quantities, have you not?

Mr. HOWARD. Not in large quantities; simply by housewives.

Mr. COOMBS. You have seen that?

Mr. HOWARD. Yes, sir.

Mr. COOMBS. And you have seen it ferment?

Mr. HOWARD. I do not recall a case where I have seen that, for my experience in that regard has simply been in the house and in connection with the household.

Mr. COOMBS. Then I will illustrate by saying that I have seen several gallons of mince-meat put up for the winter, a mixture of meats and fruit, apples, etc., cooked in the regular way, and after a while it would ferment, and at the beginning it would be taken out and scalded. Now, what would you think of that kind of food after that treatment?

Mr. HOWARD. I should consider it not as wholesome as it was when it was first put up.

Mr. COOMBS. That is simply a matter of degree?

Mr. HOWARD. Yes, sir; a matter of degree. Again, there may be

certain other products, and that result from decomposition or a certain product of the yeast, which in itself makes it still more poisonous; but I am not aware of those at present. Those toxic effects are things that I have not studied into, and I can not state definitely in regard to them, but when it comes to the cell tissues, we have had some experience along that line, and know whereof we speak.

Mr. MANN. I see that you have some canned vegetables there, too. Does the same condition exist that you referred to in the fruit in the canning of sweet corn, for instance?

Mr. HOWARD. I can not state definitely. Fungus will grow upon sweet corn, but whether it ever goes into the canned product—

Mr. MANN. I suppose that sweet corn is never canned without more or less of it.

Mr. HOWARD. I do not know whether it is or not.

Mr. MANN. I am familiar with the canning of it, factory canning. It is almost impossible to gather it and can it so that more or less of it does not sour some. But I mean from your microscopical examination. I see that you have some cans there. Have you examined those?

Mr. HOWARD. No, sir; I have not.

Mr. RICHARDSON. Mr. Howard, have you given this matter that has been so interestingly submitted to us here, this matter of baking powders, any particular attention?

Mr. HOWARD. No, sir. Baking powder is entirely out of my line.

Mr. RICHARDSON. It does not come under your line?

Mr. HOWARD. It does not come under my line; at least it does not at present. If it was adulterated with certain kinds of substances, such as starches—

Mr. RICHARDSON. You are confining your remarks to canned fruits?

Mr. HOWARD. I am confining my remarks to canned fruits, or products of vegetable origin of that character, where the tissues remain intact. Even after the boiling of the fruit the tissues are there in the main as in nature—that is, the elements of which they are composed, though more or less disintegrated.

Mr. RICHARDSON. Well, you have stated before the committee, as I understand it, to the effect that in order to protect the public against unwholesome food, you must have every ingredient labeled that goes into it.

Mr. HOWARD. I am not, furthermore, stating as to what is my opinion, if I have any, along that line; because, as I said before, I was requested by Dr. Wiley to come here to make statements in regard to what is found in these fruits and these fruit products. If it is thought wise by Congress to put a label on the articles and things in a package, they must do so after considering the needs for such legislation; but I have not, as I said, given it sufficient attention to express an opinion.

Mr. RICHARDSON. You have not got the machinery of it?

Mr. HOWARD. I have not got it—the machinery of the legislation.

The CHAIRMAN. You are simply discussing the matter as to your own work.

Mr. HOWARD. Yes, sir.

Mr. RICHARDSON. I see your view very plainly, Mr. Howard; that is all right.

STATEMENT OF MR. W. D. BIGELOW, CHEMIST IN CHARGE OF THE FOOD LABORATORY, BUREAU OF CHEMISTRY, DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

The CHAIRMAN. Please proceed in your own way and give us such information as you may have.

Mr. BIGELOW. Dr. Wiley asked me to appear before the committee this morning and relate some experiences which I have had in collecting samples of foods for examination, and any other information in that connection which seemed best; and in order to avoid the effect of relating disconnected anecdotes, I will weave these illustrations into a line of argument which, it seems to me, has been omitted in the testimony before the committee heretofore, except as it has been touched on at various points, and which seems to me to be very important.

Those who have appeared here favoring one of the bills which is pending before you have argued that no legislation as to food is proper except regarding foods injurious to health, or containing ingredients injurious to health, which amounts to the same thing. Now, I wish to take the stand that, as a class, adulterations relating to foods which are consumed in large amounts are injurious to health—that adulterated foods that are consumed in large amounts are injurious to health at certain times, under certain conditions, which often occur.

Let me give an illustration: Take milk, for example, as adulterated by the most harmless method, that of dilution with water. Now, I do not mean barnyard water, which is most frequently used in this country, but take the purest water that you can obtain, boiled water or distilled water, if you please, which everyone will admit is perfectly healthful, and use that milk for an invalid who gets nothing but milk for food or use it for an infant who is deprived by nature of its natural food, and is fed by the prescription of a physician with food prepared of milk, water, sugar of milk and cream, each of which is a fairly definite article, each present in the amount prescribed by the physician. Suppose the milk which you use has 25 per cent of water in it, and suppose the infant to which it is fed is sick in the summer with the trouble that is common to infants—it is called by a number of names, summer complaint, summer diarrhea—it comes on during the second summer, when teething is most severe.

Now I claim that that might be injurious to health—the dilution by water alone; but suppose that the milk sugar is adulterated with cane sugar and that this particular child has the disposition which many children have, that is, the inability to digest cane sugar without fermentation. Suppose that the milk sugar that is bought at a drug store for pure-milk sugar contains a certain amount of cane sugar. I have a sample here which was bought for just that purpose [producing sample]. This was bought for a child in just that condition, was bought at a drug store where the purchaser had reason to believe that the product was what it was represented to be. This sample contains between 20 and 25 per cent of cane sugar, and I claim that under those conditions the food prepared with it was unwholesome and the sugar, for the purpose for which it was intended, was unwholesome.

And then take the cream that is used in some preparations. I have another product here. This is called "Kremo, the Pure Food Brand," dry cream. It is advertised and sold for the purpose of making cream

from skim milk. It consists of gelatine. Now, gentlemen, I do not claim that gelatine is an unwholesome product. We use it in calves' foot jelly, and we feed it to invalids, but it has not the fat which characterizes cream, and this particular child, I will say the average infant, 1 or 2 years old, in the condition that I speak of, is not in condition to digest gelatine in the first place, and in the second place it does not receive the food which it requires; it requires food of a certain definite composition. Cream prepared with this product or similar ones—the same product sold under different names—is sold in various cities.

Mr. MANN. Before you leave that illustration, let me ask you if you claim that the addition of pure water to this milk makes it unwholesome; if it does not reduce the butter fat below the normal amount?

Mr. BIGELOW. In this way, that when milk is fed under the physician's prescription to an invalid who can get nothing but that milk for food, the prescription reading that the patient shall have a certain amount of milk, the patient is not getting the amount of food he is supposed to get, and in the present day the leading physicians are just as particular about the food of their patients as the medicine that they prescribe.

Mr. MANN. An ounce of milk does not mean anything.

Mr. BIGELOW. Yes, sir—

Mr. MANN. An ounce of milk from a Jersey cow and an ounce of milk from a Holstein cow would mean entirely different things.

Mr. BIGELOW. Quite true; and yet by the food laws of our great cities the milk must come within certain limits, and all the milk which passes the food laws does not vary widely. We know it must contain, in a certain city, a certain amount of fats and a certain amount of other constituent parts.

Mr. MANN. I drew the milk law that is in force in the city of Chicago now. Do you mean to tell me—of course I will take your word for it—that if the milk from the dairy far exceeds in the amount of butter fat it makes it unwholesome to put in a sufficient amount of water to make it a proper amount?

Mr. BIGELOW. No, sir; I do not say that it does.

Mr. MANN. That is what I wanted to get at.

Mr. BIGELOW. You can add to wholesome milk any amount of water—

Mr. COOMBS. It simply dilutes it?

Mr. BIGELOW. Yes, sir.

Mr. ADAMSON. The nutrition would be reduced in quantity and not in quality?

Mr. BIGELOW. I mean that it would be reduced in quantity.

Mr. COOMBS. You mean that the milk from the Jersey and the Holstein is richer than the milk from the town pump?

Mr. BIGELOW. Yes; that is what I mean, that if the milk fed to an invalid or an infant is not equal in nutritives to what it is supposed to be, it is unwholesome.

Mr. ADAMSON. The child may starve to death?

Mr. BIGELOW. Yes, sir; or it may be in a condition where it hangs between life and death.

Mr. ADAMSON. That is equally true if the cow gets an insufficient quantity or quality of food?

Mr. BIGELOW. Yes, sir.

Mr. MANN. It is a fact that it is reduced below the standard of the product?

Mr. BIGELOW. Yes, sir; and our city laws will not protect a man whose cow gives poor milk—

Mr. MANN. The mere fact of the adulteration has nothing to do with it?

Mr. BIGELOW. It is the fact that the product is sold.

Mr. DAVIS. Does not the cow's milk vary very much with the food that you give the cow?

Mr. BIGELOW. That is true.

Mr. DAVIS. The water you give them and the food that they have?

Mr. BIGELOW. That is true.

Mr. DAVIS. Any cow?

Mr. BIGELOW. That is true. And it is also true that with families who keep a single cow the milk that is consumed by one family keeping a single cow will vary considerably from that consumed by another. But you will find that in a city's milk supply that is not diluted, but comes from dairies keeping a large number of cows, the idiosyncrasies of the individual animals are averaged and the milk coming from the various dairies, in spite of variance in breeds of cows and methods of feeding, does not change this fact.

Mr. MANN. Is it not a fact with reference to dairies all the time that where the cow gives a milk that is below the butter-fat standard, they skim more or less of the milk and throw away or dispose of the skimmed milk, and put the cream in the rest of the milk so as to raise the standard, and that on the other hand in dairies where the cows give milk that is above the butter-fat standard they put water in it?

Mr. BIGELOW. That is true.

Mr. MANN. Is it not true of four dairies out of five that take milk to the city?

Mr. BIGELOW. That is very often done, and that is why I lay so much stress on this matter. That enables the physician to prescribe more intelligently, perhaps, than he otherwise would be able to do, because the milk supplied to the cities is more uniform.

Mr. MANN. But it is averaged by adulteration. The normal product could not be good. In both cases there is adulteration, in one case with cream and in the other with water.

Mr. ADAMSON. If you mix pure milk with poor milk, is not that adulteration?

Mr. BIGELOW. That depends on the definition. The milk in a given state which conforms to the standard, which conforms to the law, is not adulterated. If the milk sold in the District of Columbia had 4 per cent of fat and 8 per cent of solid in the fat, if those are the standards, milk which conforms to that is pure milk under the law, and there is no means of proving whether water has been added to that milk or not, and such milk is often sold.

Mr. MANN. But the injurious effect is not because they put water in, but because it is below the proper standard of fat.

Mr. BIGELOW. Yes, sir; that is true.

Mr. RICHARDSON. And the water is the cause of that?

Mr. BIGELOW. Yes, sir; it changes the food from what it is supposed to be.

Mr. MANN. Water might be the cause of it, or skimming?

Mr. BIGELOW. Yes, sir: that is true. I have given one illustration of the method of changing it.

Mr. MANN. I understood you to give an illustration to prove that all adulterations are injurious?

Mr. BIGELOW. I did not say that. I said that such adulteration might be injurious under certain circumstances?

Mr. TOMPKINS. You make a difference between adulteration and dilution?

Mr. BIGELOW. No, sir. Under the law dilution is one form of adulteration.

Mr. COOMBS. It is true that under certain circumstances a mixture of pure food products might be injurious?

Mr. BIGELOW. Yes, sir; I think gelatin, for instance, is a pure product.

Mr. COOMBS. But it is simply because, chemically, they do not mix right?

Mr. BIGELOW. They mix all right chemically, but physiologically they are not what is wanted for the patient.

Mr. COOMBS. Physiologically, yes; I stand corrected.

Mr. BIGELOW. Now, let the patient improve a little, let his health improve, and let the physician prescribe meat extracts. At the present day, and for a number of years, there have been a number of products on the market which are claimed to be somewhat different from what is known as Liebig's extract. They are claimed to be meat juices; they are claimed to be the same as what is obtained in the hospital or the household when you put a little meat in with just enough water to cover it, and heat it up slowly until all soluble nutritives are taken away, and finally boil it until you have a jelly, and a very wholesome and nutritive food.

There are a number of products on the market which are claimed to be the same thing, and some of them are and some are not. Now I have known a number of cases where physicians have prescribed products which have been represented to them as of this nature, but were not as represented. The patient was not getting the food that was necessary for him—a patient to whom it was very necessary that food of that character should be given.

And then, again, with other beef extracts, in places where a crude attempt is made to prepare a food that will pass a very much over-worked chemist, who must often content himself with the determination of nitrogen in order to make such a preparation pass the chemist, this same product, gelatine, is added. Now, gelatine has a certain food value, but it is not the equal at all of the proteids and albumenoids which are supposed to be there and which occur in meat extracts properly made. Of course I understand that all meat extracts contain some gelatine, but here most of the proteids are replaced by gelatine; and again the patient does not get what he is expected to get, what the physician expects him to get.

Now, let the patient progress until the time comes when he is put on vegetables. The physician may say that he can take any nice vegetables. The family desires, and the physician desires, that the highest grade of foods be given him. In summer he can, of course, get vegetables in the state desired, but in the winter he depends upon canned goods. I went into a grocery store the other day and asked for corn. I was given some marked "First Quality Sweet Corn." Now, this

onsists of what is known as soaked corn; that is, the corn has been dried, or at least was too mature to be used, and was taken and soaked and canned. It is a perfectly wholesome article, but not very digestible.

Mr. HOWARD spoke of the pineapple which was canned, a large percentage of which was composed of the parts from the periphery of the pineapple—that is, has a great deal of the husk, the cellulose, in it—which is not so digestible as the interior of the pine. And so with this canned corn, it is not so succulent and not so digestible, and I claim that the patient is not getting what he is supposed to get. And so with pease. I have some pease here marked "Fresh from the farm"—spanning the county and State—"Fresh from the farm."

Mr. ADAMSON. How many physicians would prescribe green corn or sick people?

Mr. BIGELOW. I would not say that corn is the most digestible food or a patient, but yet I claim that in a proper state corn is not indigestible at all to many people; but of course the food that is prescribed depends entirely on the sickness through which the patient has gone.

Mr. MANN. Why do you hesitate to say what that label is? If it is bad food, let us know it.

Mr. BIGELOW. I have gone to the market and picked up two or three of these, but it seems to me that would be unfair to others whose foods are on the market. At the same time, if the committee desires me to put this on record, I will do it.

When we undertake in the Bureau of Chemistry to examine a class of foods we go through all the leading groceries in the various cities and get all the brands of goods that we can find, and then in the publication which we issue we print all the names of the goods and the manufacturers, but it does not seem to me that it would be fair to name his one brand in this one case. If the committee desires, however, I will make this a part of the record. I will state, however, it does not seem to me to be fair, any more than it would be fair for me to go out and get a glass of jelly which I know to be of high grade and make that fact a matter of record and advertise the goods of that firm, whereas I know there are others that put up just as good jelly. It is not putting them all on the same basis. When we get everything there is on the market, it is a different matter. However, if the committee desires it to go on the record, very well.

Mr. RICHARDSON. I think that is perfectly fair, and you have taken the right course about it.

Mr. MANN. If it is injurious to health, I think it should be on the record.

Mr. RICHARDSON. I do not think you should be called upon to discriminate in this kind of an ex parte statement.

Mr. BIGELOW. We have one bulletin on meats, and one on jellies and jams, and we have in a far state of preparation a bulletin on olive oils, and besides a large number of bulletins we have published, all of which give the name of the product and the name of the brand and fully descriptive details. But in those cases we obtained from all the grocers all the brands that we could find, and treated them all the same.

Mr. DAVIS. I wanted you to go back to beef extracts for a moment.

Mr. BIGELOW. Yes, sir.

Mr. DAVIS. You consider, I judge from what you say, that Liebig being the standard beef extract—

Mr. BIGELOW. I mean by "Liebig" not now merely those extracts put up by any of the three Liebig companies, but those put up on the same plan. There are a large number of them that we class as Liebig extracts. I do not mean by the use of that word to distinguish them from Armour's or Hammond's or Cudahy's or anyone's extract.

Mr. DAVIS. Liebig is an ancient and honored name in that connection, and the name sounds good and looks good on a label. I was going to state that I know of a patient who took Liebig's extract, and it failed to agree with him entirely. It was the extract prescribed by the physician. Then Armour's extract was substituted, and that agreed with the patient perfectly.

Mr. MANN. Armour's extract is made in Chicago.

Mr. DAVIS. There was evidently some difference in those extracts, because the effect on the patient was different; and who is going to fix the standard and determine which one is pure and which is impure?

Mr. BIGELOW. As I understand the Hepburn bill, every food product is considered pure if it is labeled so as to show exactly what it is. Armour's extract of beef, if labeled what it is, would certainly, according to the bill as I understand it, be regarded as a pure article, and so with Liebig's.

As you say, they are different. Although they are of the same general composition, and made in the same general way, they are somewhat different. We have examined them both in the Bureau of Chemistry, and have the analyses of both there, and there is quite a difference in the salt content, for instance, and in other substances.

Mr. COOMBS. Is there anything but beef in them?

Mr. BIGELOW. I can not say they are made only from beef, but they are made entirely from meat.

Mr. COOMBS. Might there not be pork in them?

Mr. BIGELOW. That is a matter that I can not answer. I can not say what kind of meat goes in them. I am not familiar, that is to say, with the trade secrets of the firm.

Mr. COOMBS. You would have to be familiar with the trade secret in order to say? You could not tell by the analysis with regard to beef extracts?

Mr. BIGELOW. No, sir; you could not tell by the analysis.

Mr. MANN. What do you mean by saying that the Hepburn bill requires that the label should say what it is, in regard to beef extracts?

Mr. BIGELOW. I understand that under that bill foods must be properly labeled.

Mr. MANN. Well, here is a particular kind of beef extract that has a distinctive name and you put it under a distinctive name. Now, the only requirement is that it should be labeled to show that it is a mixture or compound—that it should show the character and constituents thereof, and show the resultant substances from the use of it. How would that apply to the beef extract?

Mr. BIGELOW. In making that statement I, of course, am presuming. I have not the authority to interpret the law.

Mr. MANN. Assume that it covers the whole thing. How can you put on a label showing what beef extract is?

Mr. BIGELOW. In my answer to that, of course you will understand that it is my personal opinion.

Mr. MANN. We are entitled to your official opinion. You are an

officer of the Government before a committee of Congress, and I wish your official opinion, if you have any.

Mr. BIGELOW. In regard to that, I have no authority to give an official opinion. I will have no authority, so far as I know, to suggest standards for the bill.

Mr. MANN. Give us your opinion, if you have one. How can it be done?

Mr. BIGELOW. Your question is what?

Mr. MANN. How can you label so as to show what is in a beef extract?

Mr. BIGELOW. Then, of course, that would depend upon the kind of label that is required. As a matter of fact, beef extract in itself—extract of beef—is an article that is well understood. It is a commercial article, and by extract of beef we mean an article made after the manner of the original Liebig beef extract. I believe that the simple label "Beef extract" or "Extract of beef" would be sufficient.

Mr. ADAMSON. But you say they have different constituents?

Mr. BIGELOW. They are slightly different in composition, but those made after the plan of Liebig are but slightly different. But in my original statement I said—

Mr. ADAMSON. And just to say "beef extract" would not give you any idea of the differentiation?

Mr. BIGELOW. If you will remember, I described those that had the greatest nutritive value not as beef extracts, but as beef fluids; "fluid beef," I think, was the term I used.

Mr. ADAMSON. Beef juice?

Mr. BIGELOW. Yes, sir; beef juice.

The CHAIRMAN. Is beef juice known in the pharmacopeia?

Mr. BIGELOW. That I can not answer. I will say, however, that beef extract is not used as a food to a very large extent. It is used more as a stimulant than a food. I mean to distinguish between the extract of beef proper and beef juices, and so forth.

The CHAIRMAN. The constituent properties of beef extract are known?

Mr. BIGELOW. Very well known, and can be labeled.

The CHAIRMAN. Then why not label them?

Mr. BIGELOW. That can be done, if a full label is desired. You can label it as containing a certain amount of proteid, a certain percentage of beef bases, and a certain percentage of salts, or you can go even further, and say that the salts—

Mr. COOMBS. You say that Armour's formula is a secret?

Mr. BIGELOW. I did not say that his formula is a secret, but I suppose in a method of that sort that his exact method of making it is not known. I have been through Armour's establishment, and they have told me just how they prepared this article, but I do not know exactly what parts of the carcass they use. The composition will depend to some extent on the portion of the carcass used. One of the South American companies used to kill beef entirely for beef extract. Perhaps they do now.

Mr. COOMBS. They used the meat of the whole animal for making beef extract?

Mr. BIGELOW. Yes, sir. Our packing houses in this country can not do that. They use the bones and the trimmings, after selling the marketable cuts. That will make a slight difference.

Mr. COOMBS. Will it make any better extract?

Mr. BIGELOW. No better and no worse.

Mr. COOMBS. You would get all that there is bad about it, and all that is good?

Mr. BIGELOW. In making it from the whole beef the greater portion of the nutritive portion of the meat is lost. If the committee or any of the committee would care to look at these soaked peas I could open a can, if you desire it. The sprouts have started and are pretty well developed.

Mr. MANN. Do you mean by that that the peas have been dried and have commenced to sprout, and then have been canned?

Mr. BIGELOW. No; I mean that the peas are dried peas, and that they have been placed in water to soften them, and in that water they begin to sprout. I do not mean to indicate that that in itself is injurious.

Mr. MANN. I did not understand whether you said that it was injurious or unwholesome or not.

Mr. BIGELOW. I merely mean that if a person desires to eat, and is supposed to be eating fresh, succulent peas, he should not receive a pea that contains a great deal more of cellulose, as he would in that case.

Mr. MANN. If a person who wanted to eat a fresh pea could not tell it when he was eating a pea that had commenced to sprout—

Mr. BIGELOW. I imagine that a great many could. I am very sure that many could not. The sprouts would not appear in the cooked article; they would escape notice. Many would not see them anyway.

The CHAIRMAN. At least he could not tell it until the can was opened!

Mr. BIGELOW. No, sir; and as a matter of fact many of these are used by people that do not know the character of goods they are using.

The CHAIRMAN. And is not that because it is necessary, in the process of canning the peas, the season being shorter than the season for canning, they dry the peas and then can them?

Mr. BIGELOW. Yes, sir; that is true.

Mr. MANN. And as a result of that the canned peas have been very much reduced in price?

Mr. BIGELOW. Yes, sir. I would not argue that these should not be put on the market, but I went into this store and asked for canned peas of the best quality.

Mr. MANN. You do not know whether they are of good quality?

Mr. BIGELOW. They would not be rated so by a first-class house.

Mr. MANN. Then you did not go into a first-class house?

Mr. BIGELOW. No, sir; I did not.

Mr. MANN. That is your fault, then, and not the fault of the peas. If you want a first-class article, go to a first-class house.

Mr. BIGELOW. That is true, and yet in corner groceries scattered through many parts of the city you will often find that this is the only article they have, and the ordinary consumer is not able to distinguish, often, between a first-class house and one that is not first-class.

I will take another article which I have here. The objection might be made that coffee is not often given to invalids, and yet I know of many cases of people who suffer from nephritic headaches—nephritis—who are, perhaps, in the throes of a very severe headache, delirious,

for hours, and as they recover, a cup of coffee will hasten their recovery and will build them up and stimulate them.

Now, suppose they do not get coffee; suppose they get some article—
Mr. MANN. They ought to drink Postum Cereal.

Mr. BIGELOW. Suppose the article they purchase as coffee is a coffee substitute.

Now, I have some samples here. This one reads "Old Reliable Coffee." Some place about this label there is the word "compound." I do not see it now, but I know that it is on the label. At any rate, that is a coffee substitute. It contains no coffee.

The CHAIRMAN. What does it contain; what is it?

Mr. MANN. Is it not more healthy?

Mr. BIGELOW. I will take up that question in a moment.

Mr. RICHARDSON. The principal recommendation of the coffee, anyway, is in its color when you go to drink it.

Give it the right color and the right look and it will taste pretty well.

Mr. BIGELOW. That depends on the individual.

Mr. COOMBS. It is the same with whisky.

Mr. MANN. Do you drink coffee?

Mr. BIGELOW. Ordinarily I do not.

Mr. MANN. Do you consider it a wholesome substance to drink?

Mr. BIGELOW. That is a matter that depends on the person. That is why I say that this is not properly branded.

Mr. MANN. Is it not the general opinion of physicians that coffee is injurious and not beneficial to health?

Mr. BIGELOW. I notice that most physicians whom I know drink it.

Mr. MANN. I know. They drink whisky, too.

Mr. RICHARDSON. Don't you think the coffee depends more on the cook knowing how to fix it and arrange it? It is hard to get a cook that will do that.

Mr. BIGELOW. Yes. Now, in the case that I mentioned, this coffee substitute would not take the place of coffee. These mixtures are composed more or less of cereals and peas or pea hulls. Chicory is sometimes used, though not as frequently as before chicory was so expensive as it is now.

Now, I claim that a coffee substitute that contained no coffee, if used for the purpose I have mentioned, would affect the health of the patient.

Now, let us take the other side. Suppose that this coffee substitute also contained coffee, and suppose it is given to a person with whom coffee does not agree. There are many such people. Suppose it contained 50 per cent or more of coffee—some coffee substitutes do—and it is sold under the advertisement and with the recommendation that it can be taken with impunity by those who can not drink coffee. There are such articles on the market, and I have known of a number of cases of people drinking them and suffering from them who can not drink coffee.

Now, I will pass on rapidly.

Mr. RICHARDSON. About the coffee, before you leave that, is it not a fact that the very best housewives and housekeepers frequently mix Java and Rio, and that produces the very best coffee you can serve on the table, that mixture of coffees?

Mr. BIGELOW. I think the majority of consumers prefer a mixed

coffee; I mean mixtures of coffees, not coffees mixed with other articles.

Mr. RICHARDSON. Is it not a fact, too, that frequently the dealers, those who sell coffees, have them mixed that way in order to meet the demands of the public?

Mr. BIGELOW. Yes, sir; they mix them that way.

Mr. RICHARDSON. Then would you pronounce those mixtures unwholesome?

Mr. BIGELOW. Those are mixtures of coffees, and I was speaking not of compounds of coffees, but mixtures of coffees with other articles.

Mr. RICHARDSON. Would you think that a law would be reasonable and fair that would require each one of these coffees to be marked on the outside?

Mr. BIGELOW. I see no objection to that.

Mr. RICHARDSON. And in the proportion that they are in there?

Mr. BIGELOW. I see no objection to that.

Mr. RICHARDSON. When you admit that each one is perfectly wholesome?

Mr. BIGELOW. Yes, sir.

Mr. RICHARDSON. And you do not think that that kind of a law would be unreasonable?

Mr. BIGELOW. I do not think so.

The CHAIRMAN. Coming back to this label a moment, this label reads, "Old Reliable Coffee"--giving the manufacturer's name--"One pound, full weight. A compound of delicious drinking coffees, guaranteed to please those who like a full, heavy-bodied cup of coffee." You say that there was no coffee in this?

Mr. BIGELOW. No, sir. That was to comply with the law that required them to put upon the label the word "compound," and that was why they put the word "compound."

The CHAIRMAN. It was compounded of various ingredients, leaving coffee out entirely?

Mr. BIGELOW. Leaving coffee out entirely.

The CHAIRMAN (reading). "Fine Old Java Coffee."

Mr. BIGELOW. Yes, sir. Now I have some samples here of compound jellies and jams, compound jams.

I have here a number of labels of fruit jams marked "compound," but the word "compound" is put in such an inconspicuous place that it would not be seen on the label.

In that connection I might call attention to canned corn and canned peas that I found at a grocery store last fall, and which were sold as high-grade articles.

Mr. TOMPKINS. The distinguishing feature of the "compound" is that it does not contain any of the things that are said to be compounded. Here is blackberry jam, "blackberry compound," and the distinguishing feature of it is that there are no blackberries in it.

Mr. BIGELOW. No, sir; those are not the usual features of compounded goods.

Mr. TOMPKINS. When you come to the coffee, there is no coffee in that?

Mr. BIGELOW. Coffee substitutes may or may not have any coffee in them.

Mr. RICHARDSON. You have not found it in any of these particular instances.

Mr. BIGELOW. The word "compound" is frequently used on coffees which are mixtures of coffees themselves.

Mr. COOMBS. That says, "delicious mixture."

Mr. RICHARDSON. And there is no coffee in it at all.

Mr. BIGELOW. I was speaking of a sample of soaked peas given me by a grocery store last fall as a high-grade article. These were packed in a Western State where it was required that the word "soaked" should be put in a conspicuous place on the label, and so it read, "Prepared from carefully selected stock and soaked in artesian-well water," the word "soaked" being printed in large capitals. I called the attention of the clerk to that, and he said it was a great recommendation, and improved the quality of the goods very much, this soaking in artesian-well water. I am sorry that I could not find that label in the laboratory this morning, so that I have not got it here.

Just one word more before we close, to call attention to some labels of olive oil which I obtained in the market, and I would like to have the gentlemen look them over. Those oils had no olive oil in them at all; some of them were imported and some of them not, but no olive oil at all.

Mr. COOMBS. No olive oil at all?

Mr. BIGELOW. No, sir. Most of them had no olive oil at all.

Mr. RICHARDSON. Then that is not a compound, if there is no olive oil at all.

Mr. BIGELOW. And in relation to the wines, may I give one instance. Several years ago Dr. Wiley asked me to go to New York to interview some of the wine importers, and obtain samples of the imported wines to compare with those that we had obtained from the customs officers. I went into one small importer's, and asked for a sample of Rhine wine. I said, "What brand have you?" "Any brand you desire." After a long conversation—he did not know who I was—he offered to put up for me a dozen cases of wine under the label of any one of a number of manufacturers or wine makers in Germany, and under any name I desired. I said, "Can you give me the —'s liebfraumilch?" He said, "Yes," and went to a drawer and showed me the label. I said, "Have you got the cap?" "Yes sir," and he went to another drawer and produced it.

Now, I do not mean to say that that is characteristic of the importers of wine, but it is possible. And in Philadelphia I went into one place kept by an alleged importer of wines, and I asked an Irish laborer who was temporarily in charge if he could give me a certain make of Rhine wine. He said that he did not know just where their Rhine wine came from, but the vineyard was somewhere in California.

Mr. COOMBS. It must have been an improvement, then.

Mr. BIGELOW. I am sorry not to be able to call your attention in detail to many of these things, but I would prefer not to go on to-morrow.

. Thereupon, at 12.10 o'clock p. m., the committee adjourned until to-morrow, March 20, 1902, at 10.30 o'clock a. m.

MARCH 20, 1902.

Committee met at 10:30 o'clock a. m., Hon. William T. Hepburn in the chair.

The CHAIRMAN. The Committee will be in order. Mr. Magruder, will you take the stand.

STATEMENT OF MR. JOHN H. MAGRUDER, OF WASHINGTON, D. C.

Mr. MAGRUDER. Mr. Chairman and gentlemen, I represent the Business Mens' Association of Washington, D. C., and the Business Mens' Association favors the Hepburn bill, and the reason we do so is because it is a bill that protects everyone. The manufacturer who turns out poor goods may be compared to the man with a clear conscience; he can stand in the sunlight and fear no one. He has nothing to hide, and no defects to cover up. His whole character will bear the inspection of daylight.

Now, the Corliss bill, on page 4, section 4, line 3, says:

SEC. 4. That any person or persons, company or corporation, engaged or interested in the manufacture of food products may at any time submit to the food commissioner a formula for the manufacture of any preparation intended for food or drink, with a sample prepared after such formula, and it shall be the duty of said food commissioner to approve or reject said formula and enter upon the record of his office, hereinafter provided for, such formula, together with the approval or rejection thereof, and if rejected, the specific reasons therefor.

Now, that bill allows anyone to prepare foods which may not have a particle of the article that they intended it to be.

And then again for every merchant that clause can get up one of the biggest advertisements that any merchant wants. If he gets the written sanction or guaranty of the Agricultural Department, at the same time his liberty to use it, and that is one of the things that I like about the Hepburn bill, that when this board decides upon an article, they decide what an article shall be, they do not decide on the quality of an article and give it to a man and tell him that his article is good and pure and can be sold. That is the feature which I shall come to in the Hepburn bill hereafter.

Now, gentlemen, here is something that reflects on the grocery merchant, and which made me a little hot, because I have not any secrets in my business, it is open and above board to anyone, there is nothing I want to hide, and nothing that I wish to conceal. I have never done it in my life, and I am not going to commence now.

What I refer to is in the Evening Star of Monday, and it seems that these gentlemen appeared before your committee on Saturday, and perhaps the halls of Congress may vibrate, for I see that at the very same hour I was talking on the same subject before the Senate committee—Senator McCumber's committee—I was talking for the laboring man and for all human beings; he was talking for his own pocket, and I had no great interest in this bill. I can protect myself. I sell the best of goods that can be procured, and I pay the most money for any article. I go direct to headquarters. I go to the manufacturer and the producer. I do not go to the so-called manufacturer who sells at wholesale, and who will also sell to families, as this house does. I know that to be a fact, and they have sold goods in this city.

Now, this is in the Evening Star of Monday, March 17, 1902. It is headed:

Secrets of grocers—Facts told a Congressional committee—How jelly is made—The production of olive oil.

Well, now, that is a question that must be left to a person himself, about olive oil. People do not like pure sirup. The heading of the article goes on:

People would not recognize pure maple sirup—Testimony of Mr. J. H. Madden, of Chicago.

Now, it is quite a long article, but it says down here:

As preliminary to his advocacy of the Corliss bill, he said that for the last fifteen years he had been in charge of the manufacturing department of his firm, and during that time he had never known of an authentic case of poisoning from the use of canned goods.

I do not agree with the gentleman. Now, I did not hear the testimony here, but I heard the testimony of the gentleman before the Senate committee that he had tested a can of tomatoes and had not found a particle of tomato in it. Did he so testify here? Did he testify as to canned tomatoes that had not any tomatoes in the can?

Mr. TOMPKINS. I am not saying that he did not, but I do not remember it. He spoke about some compounds. Yesterday we had some testimony in regard to compounds; for instance, coffee that had not any coffee in it.

Mr. MAGRUDER. He testified over there about tomatoes. Now, there are tomatoes (canned goods) that are put up that will poison people; not in the can, but they are put up in such a kind of way that they will poison. And he says here that it is an idea that there is no case on record of such poisoning.

Now, we have seen it often—not in my practical experience, because I have never had any fear of the canned peaches, or tomatoes, or anything going out of my store. But the class of merchants that the Hepburn bill will protect are the corner groceries. There are over 1,500 of them here in Washington, and it is that kind of merchants that need protection. They do not know the class of goods. These men, salesmen, come here, and they are the best talkers, and they can convince those men, and they try to convince me, that everything is pure, and that I should not be afraid to sell it. A great many things should not be sold, but they will sell a swell head—that is a common expression among merchants—a swell-head can, with the head bulged out. If that can goes out, it is injurious.

If I see the least sign of a can raising and swelling, I know it can be sold, but I am afraid to sell it on account of the customers. I throw that aside in the waste barrel. I suppose that on my canned goods through the season there will be \$100 worth thrown away, because I fear it, and would not use it myself, and would not let anybody else eat it.

Mr. TOMPKINS. That is because of the presence of gas and fermentation?

Mr. MAGRUDER. Fermentation; yes, sir.

Mr. TOMPKINS. A gas arising in the can?

Mr. MAGRUDER. Yes, sir. Now, here is this article, under the heading, "Information about jelly." That, gentlemen, seeks to protect that so-called jelly.

Mr. MANN. I suppose that you are aware that Mr. Madden represents one of the largest grocery houses in the world, and stands on about the same par that you do in the retail business in Washington in the wholesale business?

Mr. MAGRUDER. Now, Mr. Mann, that is here in this article. I beg to differ. I am talking about the things that are here—

Mr. MANN. You are talking about a newspaper report?

Mr. MAGRUDER. Yes, sir. He says:

We sell a 30-pound pail of jelly for 60 to 65 cents a pail, including packing.

The price has advanced. Last fall he could have sold that jelly for 45 to 50 cents a pail. But apples have been very scarce since last fall, and there was a very small crop. That jelly I had from as large a manufacturer as this gentleman who manufactured this, and he said that he sold his 48 cents for the pail, and you can not buy these pails for 12 cents, or I think 15 cents is the highest price for that. Now, Mr. Madden states:

This jelly is made from the juice derived from the skins and cores of apples, mixed with glucose. * * * We sold a thousand pails of this jelly a day.

That was before the law by the State, and now he says that he sells 20 pails a day.

Now, why does he object? I say this, gentlemen, that I would object to an imitation jelly. I am not here to fight things that are put up that would not injure the state of health, but I am here to fight anything that is sold for what it is not. If it is branded what it is, let people buy it if they want to, but do not sell it for jelly.

Then, Mr. Madden does not speak of the jams and fruit butters. The same gentleman told me yesterday—he is a New York man—that he had a jam and would give you any kind of a jam, but that it had not a particle of the berry in it.

Mr. MANN. You do not mean to say that Mr. Madden told you that?

Mr. MAGRUDER. No, sir.

Mr. MANN. You said the same gentleman?

Mr. MAGRUDER. No, sir; this gentleman is from New York.

Mr. MANN. I understood you to say that same gentleman.

Mr. MAGRUDER. I do not know Mr. Madden, and I do know of his house in Chicago. They have always stood very well. But this gentleman said what I have told you. I said, "Well, what do you mean by that?" He said, "We have sweet potatoes, and pumpkins, and glucose, and that is what we use." He did not hesitate to say, "But we make fine jellies besides." He said:

We do not sell as much as we used to on account of some of the State laws, but we sell here in Washington; we sell to one man here who has five or six stores, and they are all small corner stores.

And he said again—

That is where all that goes; it goes to working people and where they go and get cheap lunches, and things of that kind; that is where all that jelly goes and all those jams.

And he said, "When you want it to look like raspberry or blackberry you put in tomato seed." I said, "With strawberry jams what do you do about the seeds?"

He says, "Well, we get a small seed to look like strawberry, and with the strawberries we might drop one or two in so that you can find one."

Mr. TOMPKINS. What do you say that it is made of, what material?

Mr. MAGRUDER. Apples, pumpkins, sweet potatoes, and glucose.

Mr. TOMPKINS. To make jam?

Mr. MAGRUDER. To make jam; and that is the jellies, too. This gentleman says there is not a grain of sugar in it. And this gentleman from New York says that there is nothing but glucose in it, in the body of the jelly; and when I spoke of the jelly, he said that the jelly was made of apples, the cores and skins and anything about the apple that they could buy. I said, "What about the currants?" He said, "We color that material anything that a person orders. We keep a stock on hand and color it." I said, "What about flavors?" He said, "We put a chemical flavor in this, strawberry, raspberry, or currants; our chemist makes that to season properly, and we put it in; but none of the pure extracts of the currant or the grape or any other fruit goes in that jelly."

Mr. COOMBS. What do they label them?

Mr. MAGRUDER. Anything they want to.

Mr. COOMBS. They label it—

Mr. MAGRUDER. It depends on where it goes.

Mr. COOMBS. Any old thing?

Mr. MAGRUDER. If it goes into the State of Michigan it has got to be labeled, flavored or compound.

Mr. MANN. That is sold in Washington?

Mr. MAGRUDER. Yes, sir. I can locate localities where you can go and find plenty of it.

Mr. COOMBS. I have no doubt of it.

Mr. MANN. I understood the health officers to say that we had a perfect law here in Washington.

Mr. MAGRUDER. You can find it. One of the gentlemen here yesterday asked Professor Bigelow about his corn and peas; asked him where did he go to get this corn and soaked peas; things of that kind. I know that has been going on for years and years, putting peas up after the season—soaked peas; but who would have them? This gentleman said that he went to a small store. Now, he is at liberty to come to my store.

Mr. MANN. He said he did not want to go to your store?

Mr. MAGRUDER. Yes, sir.

Mr. MANN. He said he did not pay a high price for that?

Mr. MAGRUDER. Yes; if he pays a high price he will get the right article.

Mr. MANN. If he is willing to pay a high price and goes to a reputable store, he can get good goods?

Mr. MAGRUDER. Yes. Mr. Hepburn's bill will protect that for everything there is in it. You made a remark just as I came in the other day, Mr. Mann. I had never seen you before and did not know who you were, but you hit the nail on the head that day—I think it was Monday—in what you said about Magruder's and some one around the corner, when you said that the reason they went to Magruder's was because they knew what they were getting.

Mr. MANN. You want to make people go to the higher-price stores and buy good goods whether they want to or not?

Mr. MAGRUDER. I do not.

Mr. MANN. I do not know that you do personally.

Mr. MAGRUDER. I would like competition right in that square of

all the merchants in Washington, and then see who would get the business.

Mr. MANN. I have no doubt—

Mr. MAGRUDER. I would like to see the whole business right in one square—to see all the groceries in Washington.

Mr. MANN. There is no doubt that while you get good things you charge a higher price than they do at other places for goods of apparently the same quality.

Mr. MAGRUDER. How can they be apparently of the same quality when they are not? They are apparently of the same quality—I am not talking for my purse, but I know what it is.

Mr. MANN. This sort of a bill would protect your kind of store from the competition of cheaper places.

Mr. MAGRUDER. Oh, I do not mind cheaper stores.

Mr. MANN (continuing). And put them all on the same level?

Mr. MAGRUDER. I can live, and make enough money.

Mr. MANN. But you do not carry the cheaper classes of goods.

Mr. MAGRUDER. No, sir.

Mr. MANN. You do not cater to the cheaper trade. You do not sell goods to laborers.

Mr. MAGRUDER. Oh, yes; to many of them.

Mr. MANN. Very little.

Mr. MAGRUDER. You come in there Saturday nights and see the poor women and working men buying goods. They know what they get. They buy two pounds of flour and a pound of sugar, and anything of that kind.

Mr. ADAMSON. Where is your place?

Mr. MAGRUDER. Connecticut avenue and M street.

Mr. MANN. It is the best and highest priced store in town.

Mr. MAGRUDER. Thank you.

Mr. MANN. At least, that is what my wife says.

Mr. COMBS. I do not believe Mr. Mann would use this committee for the purpose of moving his friends.

Mr. MANN. I guess I am the only member that keeps house up in that part of town.

Mr. MAGRUDER. You have another member of the committee, Mr. Joy, who is a customer of mine.

Mr. MANN. He does live up there and buys goods of you?

Mr. MAGRUDER. Now, about olive oil. That is something that I can not go into. I have a little doubt myself.

Mr. ADAMSON. Could I get some fresh corn meal at your store ground on a water mill?

Mr. MAGRUDER. Ground in a water mill?

Mr. ADAMSON. Yes.

Mr. MAGRUDER. We have some ground in Virginia.

Mr. ADAMSON. That will do.

Mr. MAGRUDER. Yes, sir.

We will drop the olive oil, because I am a little in doubt about it myself, but I do the best I can. I get my olive oil in France, and have been doing so for fifteen years, and people call for it and like it, and I saw one brand of olive oil that the Agricultural Department had here, and I would not handle it, and could not handle it. I tried it once or twice, and could not. It is sold all over the United States.

We come now to maple sirup. This same article says that Mr.

Madden stated as a preliminary that there was not enough pure maple sirup made to supply 5 per cent of the trade, and that 95 per cent of this product was a combination of maple and cane sugar made into a sirup. This combination, Mr. Madden claimed, was much more palatable than pure maple sirup. The maple of Ohio, he said, was much milder in flavor than that of Vermont, and the maple of Quebec more intense in flavor than that of Vermont. If either of the latter two sirups were sold clear, people would not use them, but would declare that they were being imposed upon. I agree with him about the percentage, but I do not agree with him about the flavor.

Mr. MANN. He did not make that statement about Vermont sirup. He made it about Quebec sirup—sirup made from Quebec sugar.

Mr. MAGRUDER. Well, I did not hear the testimony. That is the newspaper article.

Mr. TOMPKINS. He said that the Quebec sirup was the rankest and strongest in flavor, and the Vermont was the next strongest, and the Ohio sirup was the mildest.

Mr. MANN. But he said that the sirup made from the Quebec maple sugar would be too strong for use.

Mr. TOMPKINS. Yes; that is right.

Mr. MAGRUDER. Mr. Mann, I can answer you that question about my prices by an illustration. On the maple sirup I am going to quote you actual facts. I have been selling a lady a Vermont maple sirup. I get my sirup from Vermont; but there have been very bad crops there the last three years—a little better prospect this year—and it has been very scarce. I charged her a dollar and a quarter for maple sirup. She drove up in her carriage the other day and came in and asked me why could I not sell the maple sirup that she saw advertised yesterday on Seventh street at 75 cents. I said, "Madam, I could not do that. I paid a dollar for that Vermont sirup and I could not sell it for less than I do, and I think 25 cents is very little to make on a gallon of maple sirup, considering that sometimes we have a leaky can, so that the sirup leaks out; and that is the least we have to calculate."

Now, this letter here was received March 17 from Vermont. I will just read a part of it. It is headed "The Maplewood Sugar and Syrup Company, Morrisville and St. Johnsbury, Vt."

Then it goes on—it is all printed, and I suppose the same goes to every customer—as follows:

We now have a large list of customers that have been buying sap sirup for years, having educated their better class of trade to their superior quality, flavor, etc., of Vermont sap sirup. In consequence, where sap sirup is made, the residents will use nothing else.

We have a Chicago trade educated to use sap sirup that requires from 3,000 to 4,000 gallons, and averaging to sell at 25 per cent more than sugar sirup made by sirup companies in Chicago and other sections.

That means what this reporter in the paper says this gentleman here said, that it is not maple sirup; it is sugar sirup.

Now, to give you gentlemen a further piece of information, over ten years ago a man came in my store and said that he wanted to see me privately, and I took him back in the office, and he took out a little vial containing about 4 ounces and said, "Try that, Mr. Magruder." I said "That is a maple sirup, but it is a very poor article." He said, "We are experimenting on it, and we want to get a patent out on it, and we want to see if you will not go in with us." He said, "There

is not a particle of maple sugar or maple sirup about that. We are improving on it all the time, and we are going to improve on it until we get it down like Vermont maple sirup."

Now, those are facts; and he wanted to get a patent out for making maple sirup.

Mr. MANN. He wanted to, but did he do it?

Mr. MAGRUDER. I never saw him afterwards. I told him I did not want to go into a fraud. And here he talks about the wholesale manufacturer being unable to do business without a profit on all his goods. It will only result in raising prices all along the line.

Mr. Hepburn asked a question there. I believe in competition, and I want competition all the time. Now, here is some apple jelly [exhibiting sample]. Here is some Michigan goods. I tried it three years ago. Mr. Mann said that I sell high. I thought I would try and see, and get some of that compound currant jelly, and see what the people were asking for. This is 3 years old, and I bought some of it, and I still have it. Educated people know the difference, and few have bought it. It has shrunk, and that means that it is not selling.

Now, there is currant jelly that is over 2 years old [exhibiting sample]; and, gentlemen, you can see that this 2 years old is pure jelly. There, you see, is the word currant on there—the flavor of the jelly. That is what gentlemen here have been fighting against—putting the flavor on the brand.

Mr. MANN. What makes it shrink?

Mr. MAGRUDER. Some chemical process in it.

Mr. MANN. It undergoes a change?

Mr. MAGRUDER. Yes, sir.

Mr. TOMPKINS. They call this—

Mr. MAGRUDER. That is pure apple jelly [exhibiting sample]. The Government can take those samples if they wish to.

Mr. MANN. I would not call this jelly at all [indicating sample].

Mr. MAGRUDER. That was hard, but the room here is warm.

Mr. MANN. Good jelly ought to stay in a room like this any length of time without getting so soft as this.

Mr. MAGRUDER. If you put gelatine in that it will make it hard.

Mr. MANN. I have made currant and apple jelly all my life and—

Mr. MAGRUDER. You put that out of the window there and you will see. It was hard in my store, and that is a temperature of over 60 degrees.

Mr. MANN. This, I notice, is moldy on top; does that make it injurious to health?

Mr. MAGRUDER. No, sir.

Mr. MANN. You do not agree with the microscopist who was here this morning, then.

A MEMBER. Your mother would have told you that mold was an advantage.

Mr. MANN. I knew it, but the gentleman we had here, the Chemist of the Agricultural Department, did not.

Mr. COOMBS. He did not advise you to eat the mold?

Mr. MANN. No, sir; but he said that anything that had mold on it, fungous growth about it, was injurious to health.

Mr. HOWARD. I would like to make just a statement in regard to the statement yesterday on the subject of that mold.

The CHAIRMAN. You can do so later on. Do not interrupt these witnesses.

Mr. MAGRUDER. The Hepburn bill, in line 25 on page 5, section 6, reads as follows:

Second. If any substance or substances has or have been substituted wholly or in part for the article, so that the product when sold shall deceive or tend to deceive the purchaser.

Now, that is where I say that everything should be branded. Then on line 3 of page 6 it says::

If any valuable constituent of the article has been wholly or in part abstracted, so that the product when sold shall deceive or tend to deceive the purchaser.

Now, gentlemen, some one wanted to know about the resultant of things, and so forth, the other day, and now I am going to tell you about vanilla. I do not know how you can get around the law to prevent this, whether the Agricultural Department can prevent it or not, but the vanilla bean, or the best vanilla bean, comes from Mexico, and there are some merchants who buy the vanilla beans by the wholesale in large quantities, and they take the vanilla beans—I do not know that they take the Mexican vanilla beans or the other vanilla beans, but they will extract the vanilla out of the bean, and then sell it again.

Now, what I mean by that is that they will take this long bean and the short bean and extract the extract that was in there, and then they will put some kind of a molasses or sirup over it, and cover up these holes and polish it up and bundle it in packages and put tin foil around it again and sell that off.

Now, that class of beans a man will sell at any price where he can get a merchant to buy. He will first feel the merchant to see what kind of beans he wants, and if he wants to pay \$10 a pound, he will sell them to him for \$10; and if another merchant wants to pay \$6 a pound, he will sell them to him for \$6.

Every bean that comes into my house costs \$16 a pound. There has been no extract taken out of those beans, and that is why I charge 25 cents; and there are 80 beans to a pound, and they cost me 20 cents, and I charge 25 cents. That is not such a big profit on these beans. When others sell it for 10 and 15 cents, how much extract do you get? Many families make their own extracts with the vanilla beans.

On page 6 of the Hepburn bill, in line 21, it reads:

Seventh. If it be labeled or branded with the intent so as to deceive or mislead the purchaser, or purport to be a foreign product when it is not so, or is an imitation, either in package or label, of another substance of a previously established name, or which has been trade-marked or patented.

I have nothing to do with the trade-marked or patented, but I have with the "established name." In line 21 it should be made to read "if it be labeled, branded, or made with intent to deceive."

It reads now "labeled or branded," and I think the word "made" should be inserted, so that it would read "if it be labeled, branded, or made with intent so as to deceive."

Now, gentlemen, I am not a Kellar, but I can give you a formula for manufacturing any drink that you call on me for.

I have a drink here which I have brought as a sample.

Mr. COOMBS. That is a chemical drink, you mean?

Mr. MAGRUDER. Yes, sir. Kellar and some of those gentlemen explain some of their tricks, and then after they explain them you

can not do it; but here is a hint to the wholesale merchants, and they can take the hints. On this method you can manufacture anything that you want. Here is a price list which I have. There are 4 pages of prices here with directions for general use. And then on page 15 we find directions for making brandy:

To 40 gallons colored French spirits add 2 ounces of brandy oil; mix well, and add 1 quart of white sirup or glycerin. Brandy oil makes a good, well-flavored brandy.

To imitate any particular brands, add a small quantity of the kind to be imitated: about 3 gallons to 40 will answer the purpose. To give age and cover the spirit taste, use our clarified prune juice.

Then, on whisky, they give directions for making any kind of whisky—Bourbon, Monongahela, rye, wheat, malt. The directions are as follows:

To 40 gallons of French spirits add 2 ounces of either of the above oils and 1 gallon of clarified prune juice.

Some manufacturers use 5 gallons of rye whisky to 30 gallons of French spirits in preference to using all French spirit.

Our clarified prune juice should be used to cover the spirit taste. It will give age and smoothness to the blend.

Then there are directions for making Irish and Scotch whisky.

Mr. ADAMSON. I would like to ask you what is the prevalence of the sale of that kind of thing in Washington?

Mr. MAGRUDER. We have a gentleman in the Treasury who receives a large salary for gathering just that information. I think the gentleman had best apply to him for those statistics. I did not come here with any statistics.

Mr. ADAMSON. I want all things for the benefit of the people; that is the reason I asked you if you know of the sale of any.

Mr. MAGRUDER. The Treasury Department can give you the statistics.

Mr. ADAMSON. On the sale of them?

Mr. MAGRUDER. They can give you what is sold in the United States, and I do not know the statistics because I do not handle them. The directions here for making Scotch whisky and Irish whisky are:

To 40 gallons of French spirits at proof, or 10° over, add 4 ounces of Irish or Scotch whisky oil and 1 gallon of our white prune juice.

Then follow directions for making apple brandy, peach brandy, cherry brandy, blackberry brandy, etc. The next is Holland gin:

One ounce of this oil dissolved in a pint of alcohol and added to 40 gallons of French spirits will make a very fine Holland gin. One quart of sirup or glycerin may be added.

OLD TOM GIN OIL.

This oil will with fine spirits make as good Tom gin as any imported. Directions: Dissolve 1 ounce of this oil in 1 quart of spirits, 188°, or alcohol, mix with 30 gallons of proof spirits, then add 2 gallons of white sirup and 8 gallons of water.

Then come stomach bitters. The directions are as follows:

Add 1 pound of essence to half a gallon of alcohol or spirits, 188°. Mix with 30 gallons proof spirits, and then add 10 gallons of water, and 1 gallon of white sirup, color with whisky coloring, or German cherry juice. This will make good strong bitters that may be further reduced with water, if a cheaper article is required.

STOUGHTON BITTER ESSENCE.

Add 1 pound of this essence to a gallon of alcohol, and mix with 30 gallons of proof spirits; then add 10 gallons of water.

The bitters when made up have a bright red color, which can be brought to the proper shade by the addition of a small quantity of whisky coloring.

Then follow the cordials.

Mr. MANN. Are those instructions used for the benefit of the retail trade?

Mr. MAGRUDER. Gentlemen, I can answer the question. Up to a few years ago manufacturers and producers never came to see me to sell to me directly. They all come now. My corn is all contracted for this season. I buy it all in Maine, from the growers there. These people come right down from Maine to see me; have been doing so for five or six years. My tomatoes are all bought, and I buy the best that I can, and my peas are all bought for the next year, and they are not one of them in the ground yet. They come right to me.

And the importers—I bought sherries from a man that came from Jerez, Spain. He came direct and brought his samples, and from those samples I selected, which I told him to ship the 1st of September.

Mr. MANN. You read a lot of recipes there. Are those for the benefit of the retail or the wholesale trade?

Mr. MAGRUDER. I think the reason that he sent me this is because I am classified as a wholesale liquor dealer, and not as a retail dealer.

Mr. MANN. Is this supposed to be a list of the recipes for the making of liquor by the wholesalers to be sent to the retailers?

Mr. MAGRUDER. This is made by this one man. He makes this up and sends to the wholesale liquor dealers.

Mr. MANN. Those are recipes for making those liquors?

Mr. MAGRUDER. And they do make them.

Mr. MANN. Is that a recipe for the wholesale man or is it a recipe for the retail man?

Mr. MAGRUDER. If the wholesale man can go to the retail man—some of the men that manufacture liquors will give this recipe, but will not give it away because they want to sell it themselves. That is the reason they do not give it to the retailers, because that is where the money comes in.

Mr. ADAMSON. Do you think that the wholesalers make up this whisky according to the recipe and sell it to the retail men?

Mr. MAGRUDER. Yes, sir; I have proof of it here.

Mr. ADAMSON. To the retail man?

Mr. MAGRUDER. Yes, sir.

Mr. ADAMSON. If the wholesale man has a liquor of that sort and sends it to the retail man and notifies him what it is, it is no fraud on the retail man?

Mr. MAGRUDER. Yes, sir, it is, if it is not branded with the man's name on it, as I will prove right here in this room by a letter that I got on Tuesday. Here are the labels all on these bottles, but they are French names and not the name of the manufacturer.

Mr. ADAMSON. And he tells his customers about it?

Mr. MAGRUDER. No, sir; they do not tell the retailers, that is it. You see in some of the towns reputable men in the restaurant business will not handle it at all; but there are some men, men all throughout the United States, who have large, showy restaurants who think that the men who come in there do not know anything and will want the concocted drinks, benedictine or chartreuse, and they have a bottle back there with a French label and name on it, and where the chartreuse is made, and all.

Mr. COOMBS. I am asking for information on this; you said a little while ago that you had contracted for your sherry from an agent?

Mr. MAGRUDER. He is the producer.

Mr. COOMBS. Why do you buy in Spain? Why do you buy the imported article?

Mr. MAGRUDER. Why do I?

Mr. COOMBS. Yes, sir.

Mr. MAGRUDER. Because the simple reason is that California has not gotten up to making the sherries like Spain. We have a California sherry—

Mr. COOMBS. Is it not enough in quantity?

Mr. MAGRUDER. They make the quantity, but it has not the requisite quality. It has not the flavor. If all California merchants were like some of them out there, it would be better for California.

Mr. COOMBS. Now, you say if they were all like some. That is true in any place. You mean those that deal in pure sherries?

Mr. MAGRUDER. What I mean is, you would get a reputation for California goods if the merchants out there had only time—would only take time; but they want to make their money right away, and they will not wait fifteen or twenty years for the wine to age.

Mr. COOMBS. Now, do you mean to say that you purchase the pure sherry from Spain that is 15 years old?

Mr. MAGRUDER. Yes, sir.

Mr. COOMBS. You do?

Mr. MAGRUDER. Yes, sir.

Mr. COOMBS. How much do you pay for it?

Mr. MANN. The question is what do they say as to the age.

Mr. COOMBS. I understand that, but I want to find somebody in Spain that can afford to keep it fifteen years?

Mr. MAGRUDER. They all do it.

Mr. COOMBS. Why do they not brand it that way?

Mr. MAGRUDER. There are no tricks in the trade. I will explain that. I believe in Spain, Jerez is the greatest port for sherries. Now, you take all those large Spanish houses that have vineyards there, and they have, say, in their sheds twenty-five butts of sherry. Now, suppose that sherry is of 1850, 1851—up to 1855. Say it is 1851; that came up in my mind. They have the age on everyone of those. Now, if I want a barrel of 1850 sherry, there are a very few people that will buy a butt of it, over 130 gallons. It is sold by quarter and one-eighth casks. That is high priced. Very few persons buy that.

Mr. COOMBS. I understand that part of it.

Mr. MAGRUDER. They have the age on it, and if they take a quarter cask out of the 1850 sherry, they take the same quantity out of the 1851 butt and put it back in the 1850 butt, and the butt is never out.

Why can not the California wine people do that same thing? But, as a matter of fact, you can not get the wine of that age.

Mr. COOMBS. What do you pay for wine 15 years old?

Mr. MAGRUDER. This, when I bought it, was 12 years old.

Mr. COOMBS. How much did you pay for it?

Mr. MAGRUDER. One dollar and sixty cents.

Mr. COOMBS. One dollar and sixty cents per gallon?

Mr. MAGRUDER. Yes, sir.

Mr. COOMBS. Do you think now that in Spain or in any other place, with the demand for sherry that exists at the present time in this world, that a man can keep his sherry for fifteen years and sell it for a dollar and sixty cents a gallon? Do you think he can do that?

Mr. MAGRUDER. Yes, sir; and they could do it in California if they would only do it.

Mr. COOMBS. They can do it in California if they can do it in Spain.

Mr. MAGRUDER. I explained to you how they do it. That wine will be there a dozen years from now.

Mr. COOMBS. Let me ask you: If a man made 50,000 gallons of wine a year and he did not sell any of it for twelve years, that is twelve times 50,000 gallons he would have to carry in his cellars. Did you ever figure on the required capacity of his cellars to accommodate that many gallons? Did you ever figure on the amount of capital that he would have to have invested to carry it all that time, and did you ever figure upon the fact that they did not do it, and that it was all a matter of fraud—this matter of labeling the age of sherry or any other thing that you get from others?

Mr. MAGRUDER. That is the way the thing is done. They can do the same thing in California, and I wish they would.

Mr. COOMBS. They can label it in California; that is true. But did you ever figure upon those things, and then estimate in your mind as to whether or not you were not cheated.

Mr. MAGRUDER. I do not think I am cheated. If I understand correctly they will have that wine a thousand years, and they will still have that 1850 wine; but they will keep on selling from the cask next lowest to it down, but they will always have that wine, and it is known all over the world; Spain is the only place for sherries.

Mr. ADAMSON. You may sell a quarter of a cask fifty times and still sell it again, so that we have no 1850 wine?

Mr. MAGRUDER. That is the way they do it.

Mr. ADAMSON. I should think anybody might do that.

Mr. MAGRUDER. I know that it is so; I know that is what it is; I know that to be a fact; it is not a state secret; it is published for the world to know, and the only thing about California and the other States, New York and Virginia as well, is that some houses out there in California, rich houses—rich men who make a fancy of the vineyards—and I do not want to bring my own business in about it, because I have such wines in my place, and they are some of them nearly as high as a good class of French wine, and if they keep the wine, they have land enough—

Mr. COOMBS. You were talking about keeping wine. Do you not know that you can not keep claret and better it after it matures?

Mr. MAGRUDER. I have claret there—

Mr. COOMBS. You are a grocer. Do you not know, if you know anything about the manufacture or making of wine, if you know anything about the expert propositions, that after claret matures it is simply useless to keep it; that it does not become better year after year; that age does not mature it any more? Do you not know that about claret?

Mr. MAGRUDER. I am sorry to differ with you.

Mr. COOMBS. You take it to your heart and study this question up a little more. I come from a country where has been raised 4,000,000 gallons of claret a year.

Mr. MAGRUDER. Are you from California?

Mr. COOMBS. Yes, sir. Claret, after it matures in the cask, and after three or four years, it ceases to better itself. It is not so with white wines, but with claret. And if you are selling anybody a claret

on the ground that it is 12 years old you are simply deceiving them—unwittingly, mind you; I do not say that you would do it purposely—

Mr. MAGRUDER. Do you want to contend that claret does not improve in the bottle?

Mr. COOMBS. No, sir; I do not say that; but I say that after a certain age it ceases to improve.

Mr. MAGRUDER. I say it improves in the bottle.

Mr. COOMBS. It may improve some.

Mr. MAGRUDER. I have some old claret that I have had for twelve years and I am getting more money for it all the time. I buy all the old wines that I can get. Clarets do improve in the bottle, and if you take a claret in good—

Mr. COOMBS. What can you buy pure sherry in California for—30 cents a gallon?

Mr. MAGRUDER. I suppose when first made you can buy for that.

Mr. COOMBS. No, no; after it is cured and has gone through all the processes and is matured?

Mr. MAGRUDER. Do you know Captain Neibaum out there?

Mr. COOMBS. Yes, sir; very well.

Mr. MAGRUDER. I am his agent, and you know what a man he is. Have you been up to his vineyard?

Mr. COOMBS. Yes, sir; I have been through his cellar.

Mr. MAGRUDER. Is not that a first-class place?

Mr. COOMBS. Yes, sir.

Mr. MAGRUDER. Does Captain Niebaum let a bottle go out of his establishment without bottling it right in his cellar?

Mr. COOMBS. Because he is a very rich man and can afford to do things that others can not do. That he can afford to bottle on his own place.

Mr. MAGRUDER. Yes, sir.

Mr. COOMBS. And now he goes out to the vineyards in the same districts and buys from them, simply because his own vineyard can not afford enough to keep him going; and he goes out and buys from the near-by vineyards, and he can afford to bottle, and does bottle it. He buys pure sherry for, say, 30 cents a gallon.

Mr. MAGRUDER. But you have got to age that.

Mr. COOMBS. Of course he has to age that, the same as they have to do in Spain.

I beg the pardon of the committee for this digression. I got on this, and I beg pardon for taking so much time.

Mr. MAGRUDER. I bought from Captain Niebaum and also from another company in San Francisco. I bought 10 butts from them of claret and sherry, and I paid them 65 cents a gallon for sherry. Why? Because I selected a good quality of sherry.

Mr. COOMBS. Sixty cents a gallon.

Mr. MAGRUDER. Sixty-five cents a gallon.

Mr. COOMBS. And you paid \$1.60 a gallon for the same thing from Spain?

Mr. MAGRUDER. No, sir; not the same thing. It was a different flavor entirely.

Mr. COOMBS. Exactly. It had been flavored in Spain, and was not the pure stuff.

Mr. MAGRUDER. I will let you come to my place, I will give you a bottle of each kind of sherry, and let you see the difference.

Mr. LOVERING. Is it not a fact that from eight to ten millions of gallons of wine are exported each year to Spain and there used to blend with their wines there?

Mr. MAGRUDER. Yes, sir. You go down to Panama and you will find vessels from all over the world there waiting for California wines.

Mr. LOVERING. So that their crack wine which they sell to us here—part of the body of that wine comes from California, is not that true?

Mr. COOMBS. Yes, sir; that is true.

Mr. MAGRUDER. They may take that wine over there, and perhaps they can prepare it and send it back to this country, but I have no way to prove it. Your consul ought to know that in Bordeaux.

Mr. LOVERING. Do you not think that this wine is better if blended than their native wine?

Mr. MAGRUDER. I suppose so. Over the United States they get wine from the different parts of this country. Up there in New York they send to the Charlottesville, Va., companies, who take it up into New York State and mix it with the wines there. That is so. The merchants know their business and know what it is best to blend with their wines, and so forth.

Mr. MANN. Do you think they ought to be permitted to blend wines without marking on them "Blended?"

Mr. MAGRUDER. The blending of wines does not come under the pure-food law.

Mr. MANN. Why not?

Mr. MAGRUDER. Not if you put one wine with another. One gentleman here said that nobody branded Java, Mocha, and Maracaibo coffees. Why do you want that on there?

Mr. RICHARDSON. Simply because I want to know what I am getting.

Mr. MAGRUDER. This bill is not for that purpose.

Mr. RICHARDSON. Why not?

Mr. MAGRUDER. You get pure coffee.

Mr. RICHARDSON. Would you not say that you were deceiving me when you sold me coffee as Java when it was Rio?

Mr. MAGRUDER. If you want to prevent that you will have to go to all the stores around the country.

Mr. RICHARDSON. No, sir. The idea is to make you brand it right, as you brand your wine right.

Mr. MAGRUDER. I am perfectly willing.

Mr. ADAMSON. Is it any harder to compass all the tea and coffee stores than all the grocery stores?

Mr. RICHARDSON. Suppose the case of coffee. I have seen coffee made out of potato slips and potato peelings. Suppose they put that in the Java, and call that Java coffee?

Mr. MANN. It is your understanding that this law would prohibit that?

Mr. MAGRUDER. An order came to me yesterday for some tea, and the man came in and he said, "Who is prescription clerk here?" Well, I wrote it out, and he said, "Put that up." It was 12 ounces of one tea, and three-quarters of an ounce of another tea, and a half an ounce of another tea, and 2 ounces of another, and so forth. Now, that is just the way they do. People come to me and ask me to give them Java and Mocha coffee, and I will give them the Java, but no

Mocha, because I have not got it. But it does not do any good to tell them so.

Mr. RICHARDSON. You are opposed to allowing any articles to go into food that are unwholesome?

Mr. MAGRUDER. Certainly.

Mr. RICHARDSON. And you are in favor of articles going into food that are wholesome and healthy to the public?

Mr. MAGRUDER. Yes, sir.

Mr. RICHARDSON. What is your idea as to the best way of accomplishing that?

Mr. MAGRUDER. The Hepburn bill would accomplish that to the letter, I believe.

Mr. RICHARDSON. I was not in here when you commenced speaking and did not hear you, and I wanted to ask you that.

Mr. MAGRUDER. The Hepburn bill will do it.

Mr. RICHARDSON. You are in favor of the admixture of all things together, provided that they are not unwholesome?

Mr. MAGRUDER. I do not want to prevent any wholesale man or anybody else from making a living, but I want them to brand a thing what it is; that is all.

Mr. ADAMSON. These qualities of the same variety of goods, it is all right, you think, to mix them? But how in the case of coffee: how are people going to know how it is about coffee?

Mr. MAGRUDER. I told you just now that people come in and ask me for Java and Mocha, and I have not the time to argue to people that I have not any Mocha coffee, but I will give them my Mocha coffee, and say that I think this is Mocha coffee; but really, in my own heart, I do not think that it is Mocha coffee.

Mr. RICHARDSON. Do you not think that you are fooling them, then?

Mr. MAGRUDER. Well—

Mr. RICHARDSON. Do you not think that it should be so packed?

Mr. MAGRUDER. Yes, sir. The people in New York who send those sacks down here—let them be branded as Mocha.

Mr. RICHARDSON. You do not mix that?

Mr. MAGRUDER. I buy it and have it roasted, but I do not know—

Mr. COOMBS. There is a small berry here we call the Mocha and use for Mocha. Now, that is a good berry. That is not the pure Mocha, but is it not about the same berry, raised in a different country from where the berry should come from? That is a South American berry, is it not?

Mr. MAGRUDER. There is a Mocha coffee like that. The Mocha coffee is not now as it was when I was a boy. I remember going to a grocery and seeing Mocha coffee—there was a little bag of Mocha coffee in a grocery on the corner of Ninth and D streets; that was about 1860—and it was there as a curiosity, labeled "Mocha coffee, 50 cents a pound." I saw that coffee, and impressed that bean on my mind, and that impression lasts with me to this day, although that has been over forty years ago.

Mr. COOMBS. As a matter of fact, Europe consumes all the best products, including the Java and Mocha. Is not that so? But at the same time we have an equivalent for the Mocha in this country; I do not know where it comes from, but it is a good berry.

Mr. MAGRUDER. But it has not the flavor.

Mr. COOMBS. But we call it Mocha?

Mr. MAGRUDER. Call it Mocha.

Mr. ADAMSON. You say that if I go and order Mocha and Java coffee from you, you do not know whether you are giving it to me or not?

Mr. MAGRUDER. I will give you Java. I can not swear to the Mocha. I have tried to get the Mocha from Arabia; but I understand that there is none there, hardly, to be had; it all goes to foreign countries.

Mr. RICHARDSON. If you have not Mocha, why do you not tell your customers so?

Mr. MAGRUDER. I do, as I say, tell them, but they are not convinced.

Mr. COOMBS. They like to think that they are drinking Mocha.

Mr. RICHARDSON. Why do you not tell them that you are not selling them Mocha?

Mr. MANN. They do not know what Mocha is, and never tasted it.

Mr. MAGRUDER. No, sir; that is right. There is a house that I used to buy coffee from, and I found out for myself that they will take Maracaibo coffee and they will label it Java, and sell it for Java coffee.

Mr. ADAMSON. If I come to your store and ask you to combine and grind for me Java and Mocha, what do you put in to supply the place of the Mocha?

Mr. MAGRUDER. We have got what we buy for Mocha; it comes in the packages that way.

Mr. COOMBS. Where does that come from—the Mocha?

Mr. MAGRUDER. From Brazil, mostly.

Mr. MANN. Do we have any Porto Rican coffee?

Mr. MAGRUDER. Yes, sir; I have tried it on my own table.

Mr. MANN. Do we have any in the market?

Mr. MAGRUDER. Yes, sir.

Mr. MANN. What is it sold as?

Mr. MAGRUDER. You can buy it. I have never bought it except in the time just after we took possession there, when everybody that went there came back with bundles of Porto Rican coffee, and was distributing it, and some of the merchants bought it. One person would come back and say that it could be bought for 20 cents a pound in Porto Rico, and then another would come in and say it could be bought for 15 cents a pound, and so on.

Now, gentlemen, we have a new possession where they raise the best coffee in the world. The only difficulty is that there is but little means of getting it here. You want a line of steamers to get it from there. I speak of the Sandwich Islands. I received a letter from there not long ago—

Mr. RICHARDSON. You say they raise good coffee?

Mr. MAGRUDER. Yes, sir.

Mr. COOMBS. They call that Boma, do they not?

Mr. MAGRUDER. Yes, sir. You gentlemen know who Dr. Hayes is, who used to live down here on New Jersey avenue. He has a plantation out there. He was on here last summer to see his family; his sisters and brothers live here. One is with Westinghouse in Pittsburgh. And I think one was employed here in the Capitol as a stenographer, was he not?

Mr. COOMBS. Yes, sir.

Mr. MAGRUDER. And he wanted me to take this coffee, and I told the Doctor that I did not consume enough coffee to take the agency,

but that I would recommend him to a firm, Browning & Baines, down on the Avenue, and he went to see them, and he came back and told me that Browning & Baines would sell his coffee for him, and he would ship it on after the first of the year. I received a letter from him last week, a two-page letter, saying that he had started the coffee, but he did not want to put it on the market, and he would have to store it here.

Mr. RICHARDSON. What is the name of that coffee?

Mr. MAGRUDER. I do not remember the name of his plantation. It is Sandwich Islands coffee.

Mr. RICHARDSON. You say that it is superior to Java or Mocha?

Mr. MAGRUDER. It is the best coffee. The statistics of the Treasury Department will tell that it is one of the best coffees in the world.

Mr. RICHARDSON. That will make those islands very valuable to us.

Mr. MAGRUDER. Yes, sir.

The CHAIRMAN. Is it not true that coffee has to age to get the very best flavors?

Mr. MAGRUDER. Yes, sir.

The CHAIRMAN. What is the proper age at which coffee should be used?

Mr. MAGRUDER. If it comes from Java, anybody who wants to improve their coffee will ship it by sea, and come around the Horn. From the island of Java, in sailing vessels, they take months and months to come, and the heat on the vessels going through the Tropics and all will improve that coffee wonderfully. Coffee 5 years old is good. If you see a worm hole in a grain of coffee do not throw it away, because that is good coffee.

Coming back to the Sandwich Islands, this gentleman said that he instructed Browning & Baines that he would not sell now, and he asked me not to ask for that coffee, because he wanted that coffee to age, and then he wanted enough coffee there to supply the demand if the demand was to arise, for he said that it was impossible to get a coffee over in a reasonable time, because we have not the steamships to carry the coffee. He says that we want more steamships; that is the trouble with them, they get a ship occasionally, and when they get one it can not carry off half what they want to send.

Mr. ADAMSON. Why does he not send it around the Horn?

Mr. MAGRUDER. He has not any vessels. He is a practitioner of medicine, who has been there several years. I think he went out there for his health.

Mr. ADAMSON. I want to ask you one more question about the coffee. When you put in that coffee in a combination for Mocha, what sort of coffee is it, expensive coffee, or do you make a profit on it because you call it Mocha.

Mr. MAGRUDER. We make a profit on it.

Mr. ADAMSON. Do you make a big one because you call it Mocha, or is it an expensive coffee in itself?

Mr. MAGRUDER. I will let out a secret. We do make more profit on Mocha than on Java, but I would rather not make a profit than to sell it, but it is impossible to convince my customers—

Mr. ADAMSON. They want something high, and you let them have it.

Mr. MAGRUDER. Yes, sir; but the proportion is so small—one-third, one-fourth, one-sixteenth Mocha—and I am going to charge for fractions, and if they want one-sixteenth Mocha coffee, I will give them that.

Mr. ADAMSON. Is that really a good coffee that you use as a substitute for Mocha?

Mr. MAGRUDER. Yes, sir; there is nothing deleterious in that.

Mr. RICHARDSON. How much of a misrepresentation is in that—is that all coffee?

Mr. MAGRUDER. Oh, well, some persons sell Maracaibo coffee for Java coffee. When you say "Java coffee" at 25 cents a pound, you do not get Java, you get Maracaibo.

Mr. RICHARDSON. Getting a mixture of coffee—Mocha, Java, Rio, each a quarter of a pound—and then some other substance to make the other quarter of a pound?

Mr. MAGRUDER. We do not put in any other substance.

Mr. RICHARDSON. Something else besides coffee.

Mr. MAGRUDER. Something else besides coffee?

Mr. RICHARDSON. Yes, sir; something else besides coffee.

Mr. MAGRUDER. You ask me that question?

Mr. RICHARDSON. Not whether you do, yourself, but if you know of it.

Mr. MAGRUDER. If it is ground coffee, they do.

Mr. RICHARDSON. What is it if it is not coffee?

Mr. MAGRUDER. I know of coffee essence being used. That is not coffee at all, not a particle of coffee in it.

Mr. RICHARDSON. Do you not want to prohibit that thing being done?

Mr. MAGRUDER. That is not my business; it is called coffee essence.

Mr. RICHARDSON. I am asking your opinion.

Mr. MAGRUDER. It ought to be branded. If it is called coffee, yes, sir; I think it should be.

Mr. RICHARDSON. What is the coffee that you use for Mocha?

Mr. MAGRUDER. Mocha.

Mr. RICHARDSON. What is the true name of it?

Mr. MAGRUDER. Mocha.

Mr. RICHARDSON. It is named Mocha?

Mr. MAGRUDER. Yes, sir. I would like to say, however, that 90 per cent of that coffee in the United States never saw Arabia. I tried to get it here once, and I succeeded about ten years ago. Anywhere they can get the little round bean that looks like a Mocha coffee. They have gotten so that the bean which used to be a little round bean is now much larger, and the bean has developed and flattened out, somehow or another.

Mr. MANN. So that people buy a Mocha coffee on the shape of the bean and not on the flavor or effect of the coffee when they drink it?

Mr. MAGRUDER. You mean that I do?

Mr. MANN. I do not mean you.

Mr. MAGRUDER. You mean the consumer?

Mr. MANN. I mean the ladies who do the marketing.

Mr. MAGRUDER. They never look at the coffee.

Mr. MANN. They know a good deal about it.

Mr. MAGRUDER. What I mean by that is, they do not know the Mocha bean from the other genuine bean.

Mr. MANN. What is that?

Mr. MAGRUDER. I mean to say that they do not know the genuine Mocha bean from the substitute.

Mr. MANN. The Mocha bean is a small, round bean?

Mr. MAGRUDER. Yes, sir.

Mr. MANN. They know it from a Java bean?

Mr. MAGRUDER. Yes, sir; but I can show you a Maracaibo coffee like the Java coffee, and persons not familiar with the business can not tell it.

Now, Professor Bigelow said that he saw an Irishman in Philadelphia the other day who said that he had some good Rhine wine, and when he was asked where it came from he said that he was not sure where the vineyard was, but it was somewhere in California. These hints here on Rhine wines will tell you that you can make it right here in this country. Here are the directions:

Rhine-wine essence: Mix 1 pound of essence in 3 gallons of proof spirits and add to 37 gallons of rectified cider, then dissolve a pound of tartaric acid in half a gallon of hot water, and add to suit taste. The essence is used in the same proportion with native wines.

Mr. COOMBS. That makes what?

Mr. MAGRUDER. Rhine wine; Prince Heinrich's wine. [Laughter.]

Mr. MANN. You go into a cheap saloon and ask for Rhine wine, and that is what you get?

Mr. MAGRUDER. Professor Bigelow said that he went into a place in New York and they said they would give him any kind—

Mr. MANN. Professor Bigelow is not a drinking man, I presume?

Mr. MAGRUDER. I do not drink at all now.

Mr. MANN. You think that you can go into a place and get a good Rhine wine?

Mr. MAGRUDER. Yes, sir; in some places. But this man is getting rich.

Now, here is something that you can pass along down the line. There is a letter that I received the other day. This gentleman says here:

Your time is worth at least 1 cent a minute, and it will take you two minutes to read this letter; and as I have no right to ask you to spend your time on my business, I inclose my check for 2 cents.

Then he goes on—I do not want to read the rest of the letter, but everything that he wanted me to buy, every one of them is labeled and branded, and his name does not appear on them.

Mr. RICHARDSON. Here is one labeled "Rock and Rye." It does not say on here what other constituents.

Mr. MAGRUDER. I can make that.

Mr. RICHARDSON. What do you make it of?

Mr. MAGRUDER. Rock candy sirup and rye whisky.

Mr. RICHARDSON. How much whisky and how much of the rock?

Mr. MAGRUDER. Just enough to suit the taste.

Mr. MANN. It is best made with the rock candy, rye whisky, and good glycerin. That is very good for the throat.

Mr. MAGRUDER. Here is this man's check on the Union National Bank, Broadway and Forty-second street, New York City.

Mr. ADAMSON. Mr. Richardson was asking you about this counterfeit rock and rye.

Mr. MAGRUDER. Counterfeit rock and rye?

Mr. RICHARDSON. Yes, sir.

Mr. MAGRUDER. I do not know anything about making that.

Mr. RICHARDSON. You are classed as a wholesale liquor dealer?

Mr. MAGRUDER. I do not sell a dozen bottles in a year. We sell lots of rock candy. But the way to do is to make it into a sirup.

Mr. MANN. In handling whisky it is handled on the basis of the proof, is it not?

Mr. MAGRUDER. We buy it on the basis of the proof.

Mr. MANN. Is it not often a higher proof than you want to use, or your customers want?

Mr. MAGRUDER. Well, gentlemen, the whisky has been diluted so much, and is diluted to this day, and I have always wanted--bonded whisky, bottling it in bond, you may say that I was the originator of that.

Mr. MANN. Do not wander from the question.

Mr. MAGRUDER. I want to say that the bonded whisky is the best, when you get it bottled in bond.

Mr. MANN. Whisky, when it is bottled, that ends it, and time has no effect on it. After whisky is bottled there is no further change, no evaporation whatever.

Mr. MAGRUDER. But if you take the cork out it will evaporate.

Mr. MANN. But whisky is most improved by leaving it in the barrel with charcoal in it.

Mr. MAGRUDER. That is when it is in bond. But when it comes out of bond—I will show you whisky that comes out of the barrel.

Mr. MANN. I have seen whisky come out that is almost as thick as sirup.

Mr. MAGRUDER. Yes, sir.

Mr. MANN. What do you do with that?

Mr. MAGRUDER. The whisky?

Mr. MANN. What do you do with the whisky of very high proof? Do you sell it in that shape?

Mr. MAGRUDER. We take a filtering cloth or paper and let that filter through, drop by drop, until all the charcoal is out of it, and we sell the whisky after it goes through the filter.

Mr. MANN. Do you dilute it any?

Mr. MAGRUDER. No, sir; because the Government prevents that, sir, I am happy to say. We can not drop a prune or anything else in my whisky after it comes in my place and is put in my cellar, and I do not do it, and if I did, I would have to send down to the internal-revenue office here and get a compound man to come up and inspect it and put a stamp on it.

Mr. RYAN. You have to have a special license for that?

Mr. MAGRUDER. Yes, sir.

Mr. RYAN. You know, as a matter of fact, that it is done where they buy whiskies that are raw and young, 1 or 2 years old, and they are sold by a retailer, they are certainly not fit for any person's stomach as they are then, and they reduce them?

Mr. MAGRUDER. I suppose they do.

Mr. MANN. Is there any whisky that is sold under popular names that has not something like prune juice in it?

Mr. MAGRUDER. Every house in the country now that is advertising whisky has a formula for putting up whisky.

Now, there is an imported bottle [exhibiting bottle] and there is a label on it. Look at that label and at the bottle. That is a cordial.

Mr. MANN. Is it not true that all this whisky is either blended or has some adulterant in it?

Mr. MAGRUDER. I do not want to talk against anybody's whisky.

I do not do it myself, but I suppose they do do it. There is whisky sold to-day with 90 per cent whisky in it, and the rest is water.

Mr. MANN. Is there any whisky sold to-day that is popularly advertised that has not something put into it to soften it, like prune juice, for instance?

Mr. MAGRUDER. Yes, sir.

Mr. MANN. What is it?

Mr. MAGRUDER. Do you want to advertise the whisky?

Mr. MANN. What is it?

Mr. MAGRUDER. Overholt whisky, which I have in my store; it is pure.

Mr. RICHARDSON. What is the number of your store?

Mr. MAGRUDER. It is a corner store up on Connecticut avenue and M street.

Mr. RYAN. Do the foreign makers of wine stamp their bottles like this stamp?

Mr. MAGRUDER. Only the wording is different.

Mr. RYAN. Here is the French mark.

Mr. MAGRUDER. You see there chartreuse.

Mr. MANN. Do they manufacture a chartreuse in this country?

Mr. MAGRUDER. Here is my receipt for it.

Mr. MANN. I am not talking about that.

Mr. MAGRUDER. They put it up. That gentlemen says that he put it up.

Mr. MANN. Do they manufacture what they call a legitimate chartreuse?

Mr. MAGRUDER. No, sir; the chemists say that they will do anything. Those are the chemical things.

Mr. ADAMSON. Mr. Richardson wants to know if there is any such thing in this country as pure Bourbon.

Mr. MAGRUDER. Yes, sir; you can get pure Bourbon whisky.

Mr. ADAMSON. Mr. Richardson wants to know where.

Mr. MAGRUDER. You can get it bottled in bond, but that bottled in bond the Government will not allow a drop of water to go into it if it is 100 proof. I have whisky, 35 barrels of Overholt, in bond, and 25 barrels of Sunnyside in bond. I have that bottled in bond. I send the certificate to Pittsburg, and they send it up on the Monongahela River and give it to the Government man there in the distillery and that whisky is reduced to 100 if it is 110. The Government always reduces to 100 in bond.

Mr. MANN. That is just what I was asking you a while ago, and you said no.

Mr. MAGRUDER. You asked me about outside.

Mr. MANN. No, sir; I was not talking about outside people.

Mr. MAGRUDER. No, sir; I thought you asked about these advertising, selling compounds.

Mr. MANN. What I asked you was, when whisky got above a very high proof, whether they permitted anything to be put into it to reduce it?

Mr. MAGRUDER. I told you that I could not do it without going down to the internal-revenue office, and—

Mr. MANN. I did not ask you about yourself; I meant generally.

Mr. MAGRUDER. If it is above 100 the Government — that?

Mr. MANN. That would be an adulteration under this bill.

Mr. MAGRUDER. Anything that comes from the natural spring, is that adulteration, putting in water?

Mr. MANN. Certainly. Here is a provision which provides that if anything shall be put in it to reduce the quality—

Mr. MAGRUDER. That is not the quality.

Mr. MANN. It reduces it from 110 proof to 100 proof. If that does not reduce the quality, what does?

Mr. MAGRUDER. Have you ever drank the Overholt whisky?

Mr. MANN. Yes.

Mr. MAGRUDER. You take it home yourself, and you will put water with it after you get home.

Mr. MANN. I do not say that you would not; I say you would. But here is a bill which you are advocating which prohibits.

Mr. MAGRUDER. That bill was passed here in Congress, allowing that 100 proof makes the law—to make it 100 proof.

Mr. MANN. What I am trying to get at is, of course, if this bill is passed, so that you can arrange it so that that can be done. Everybody knows that liquor at 110 proof is too strong to drink.

Mr. MAGRUDER. I have had it 130 proof.

Mr. MANN. But that is too strong to drink.

Mr. RYAN. The highest priced whiskies on the market are much less than 100 proof.

Mr. MAGRUDER. There are whiskies—popular whiskies—that are only 90 proof.

Mr. RYAN. The best sellers and the highest priced brands are low proof to-day?

Mr. MANN. It is not so much the proof as it is getting rid of the fusel oil.

Mr. MAGRUDER. I believe in making them put a label on to show what those whiskies are. I will stand for that.

Mr. ADAMSON. I still think of whisky, as of all other foods, that the less legislation we have about it the purer it is.

Mr. MAGRUDER. This man here has a chemist—that is, he has got the report of a chemist here; and you can employ a chemist and pay him for what you want to find out, and if you do not want such things found out you can stop your ears to it. That is the way with most of the chemists.

Now, you are talking about coffee. You had a coffee there labeled genuine Java coffee, and Mr. Hepburn read that yesterday, and it was stated that there was not any coffee in that mixture. The Government department said there was not any coffee in it.

Some of you gentlemen asked about Postum Cereal. Now, I keep what people ask for, and if they want a Postum cereal coffee I keep this, a good deal of it [exhibiting sample]. This is the Postum cereal mixture, and it has on this label "Cereal mixture," and it does not say anything about coffee, but it is a substitute for coffee where people can not drink coffee. I let my children drink this, and will not let them drink coffee, because they are too young. Seeing the father and mother drink coffee every day, they naturally want to drink some, and once in a while we give them a little cereal.

Mr. RICHARDSON. What do you think this is?

Mr. MAGRUDER. This is labeled "Battle Creek, Michigan. Postum Cereal Mixture. Makes red blood," and so forth.

Mr. RICHARDSON. What is it?

Mr. MAGRUDER. Just the cereal; wheat, or something.

Mr. RICHARDSON. No coffee at all?

Mr. TOMPKINS. No; they do not pretend to have coffee in it.

Mr. MAGRUDER. No, sir, not coffee (reading): "Not coffee, but is made from the healthful grain."

Mr. MANN. Do you not think it is just as much of a fraud on a man to have his boarding-house keeper buy that and serve it as coffee as it is to sell it as coffee?

Mr. MAGRUDER. Many people can not drink coffee and want the cereals.

Mr. MANN. Is it not often used where the people who have to use it do not know what it is and think it is coffee?

Mr. MAGRUDER. It is sold in such small quantities with me that I do not think any boarding-house keeper buys this, but I do not think it is perfectly right to ask me a question about boarding-house keepers and what they use.

Mr. MANN. I am not asking your personal experience.

Mr. MAGRUDER. But to criticise what a boarding-house keeper gives other people—

Mr. MANN. Do you not think that it would be just as much of a fraud on me if my wife bought that and served it to me as coffee?

Mr. MAGRUDER. No, sir; they do not claim it is.

Mr. MANN. They claim that it is.

Mr. MAGRUDER. No, sir; they do not claim it.

Mr. MANN. I heard my boy talking all about it this morning.

Thereupon, at 12.10 p. m. the committee adjourned until to-morrow Friday, March 21, 1902, at 10.30 o'clock a. m.

FRIDAY, *March 21, 1902.*

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

STATEMENT OF MR. HARVEY W. WILEY, CHEMIST OF THE AGRICULTURAL DEPARTMENT.

The CHAIRMAN. Dr. Wiley, the committee has not many members present, but the stenographer is here, and if you wish to you can proceed now.

Mr. WILEY. Mr. Chairman and gentlemen of the committee, what I have to say to the committee on this subject I wish to divide in two parts.

The CHAIRMAN. Allow me to ask you if you are familiar with all the provisions of the bill known as the Brosius bill?

Mr. WILEY. I think I am.

The CHAIRMAN. Did you aid in its preparation?

Mr. WILEY. No, sir; I did not, except that I was chairman of the committee on legislation and presided at its sessions. But I took no part in the discussions.

The CHAIRMAN. Do you mean that you are familiar enough with it to take it up section by section or paragraph by paragraph and make an explanation of it to the committee?

Mr. WILEY. I think I am. I heard all the discussions when it was under consideration.

The CHAIRMAN. If you will so arrange the order of your subjects so that at some time you can do that, I would be glad, and it would perhaps avoid interruptions if you would do that.

Mr. WILEY. I have that already on the list of things that I am to speak of.

The CHAIRMAN. Very well; proceed in your own way.

Mr. WILEY. I said that I would present the matter in two divisions. First, I want to present to the committee some facts in regard to the ordinary forms of adulterations as we have found them in our experience, now extending over almost twenty years; and second, I will present a discussion of the proposed measures, as you have just intimated.

I will state for the benefit of the members of the committee that I have been engaged in the study of foods for about twenty years, and have made that a special study, both in respect of their composition and also their nutritive value, and of the nutritive value as affected by adulteration, or the substitution of one body for another. These investigations have been carried on under the authority of the Congress of the United States, and under the direction, first, of the Commissioner of Agriculture, and afterwards of the Secretary of Agriculture.

I will state that the Congress of the United States has made an annual appropriation for perhaps fifteen years or more for this purpose, and it is under this authority, and with the funds thus provided, that these investigations have been made. We have covered practically the whole range of food products in this investigation, although all of our results have not yet been published. We have published 12 bulletins referring to this matter. Nine of them are parts of one bulletin, that is Bulletin No. 13, being on food and food adulterants, and three of them are general publications, referring to the same subject. We have now ready for the press another bulletin—in fact, it is passing through the press—and still another is in course of preparation.

In these studies, as I have said, we have tried to go over the whole range of food products, not even omitting staple products, which are very seldom adulterated in any way; but we thought it best to include those so as to leave nothing out of our studies. For this reason we have issued one bulletin on the cereals and cereal products, that is the adulterants that are or have been found in cereals and the products made from the cereals, that is bread, etc. Of course, in such a work as this, we found very little adulteration of any kind.

The same is true of sugar. Now, it is a common impression that sugar is adulterated with sand, and terra alba is put in flour, and all that sort of thing. That is the standing joke on the grocer, the mixing of sand with his sugar.

I will state to the committee that we have bought refined sugars all over the country, and that we have never found in a single instance such an adulteration as is believed in the public mind to exist in this kind of sugar. I do not say that there may not have been such adulterations, but in this random manner of taking samples we must have found some instances of such adulteration had it existed to a large extent, and we have never found a single instance of an adulterated white sugar. Many of the popular superstitions and beliefs in regard to adulterations of food products are entirely unfounded, as in the

instance that I have spoken of, of the mixing of terra alba with flour, although I will admit that one firm in North Carolina lately flooded the country with advertisements of a material which looked like flour and was very much cheaper than flour, and added to the weight of flour.

Samples of this adulterant have been secured, and I have a sample here of this ground white earth which was advertised for this purpose, but we never have found in any article of commerce any such substance, and I do not think that there ever was any opportunity of securing any market for such a product as that. It was simply an attempt that failed of its own weakness.

I say this to remove, if I may be able to do so, some erroneous impressions which the public may have, and which some members of this committee may share, in regard to the adulteration of staple products, admitting, as I do, that such adulterations may have been practiced. That is undoubtedly true that they have been practiced. They have been discovered in other countries, but not in this.

Mr. MANN. As I understand, with regard to the flour adulteration, it was stated quite persistently when the mixed-flour clause was added to the war-tax bill that wheat flour was often adulterated with terra alba.

Mr. WILEY. It may have been so, but the mixed-flour clause was passed to prevent the adulteration of flour with a cheaper cereal product.

Mr. MANN. It was said at the time that this was mixed very often, and I wondered whether it was just a belief or whether it had a basis in fact.

Mr. WILEY. I think that in this country it was a mere belief, without any basis of fact at all, although the records of other countries which we have on file do show such adulterations in Europe.

Mr. ADAMSON. That stuff you have there is heavier than flour, bulk for bulk?

Mr. WILEY. Very much heavier.

Mr. ADAMSON. Then could they hold in mixture a heavier substance with a lighter substance?

Mr. WILEY. Not in shipping it any distance; but for domestic use it would be all right.

Mr. ADAMSON. In the mixture of corn and wheat flour, or substances of about equal gravity, they would remain in mixture?

Mr. WILEY. Yes, sir; they will retain their mixed condition in shipment, because they are of the same specific gravity.

I state these things to show that we have not omitted the search, even in the staple articles, for the adulterants which are supposed to be present, but in this country we have not found them; and one reason, Mr. Chairman, I think, is that our food products are cheaper, and it really does not pay to mix one of these products with a staple product.

In addition to this, it is of course very easily detected.

Now, I have brought, to illustrate what I have to say, a large number of samples of pure foods and of what we call adulterated foods, and I will attempt to present these samples to the committee without taking them up in any logical order, for, in fact, there is no logical order, but just as they may happen to present themselves.

I start first with substances which are sold to the public as preservatives under fictitious names. We have found a great deal of trouble in this regard in this country.

Now, we make it a rule, Mr. Chairman, never to publish an article as adulterated until we have submitted our analysis to the manufacturer of that article, and given him a chance to defend or excuse himself before it is mentioned in public print. We make that a uniform practice, because we believe that everybody should be treated fairly, and if a man adulterates his food products he may not know it, he may be innocent; and in the absence of any intention of Congress to punish, in these investigations simply to obtain facts, we feel that it would be a punishment of an innocent man to publish him as guilty of adulteration. Publicity has been represented to this committee as one of the best remedies for food adulteration; and so we make a uniform practice of submitting any report on such sample so found adulterated to the manufacturer, before it is put into a public document.

And very often they explain, in a manner entirely satisfactory to us, how it happened to occur; and often they deny that it does occur, viz, that the article is adulterated, and then we offer to examine it in connection with their own chemist, each one appointing a chemist, and those chemists examining it together; and examining it in that way we always reach some decision which is acceptable to all parties.

Now, one of the things in which manufacturers are deceived is by these preservatives which pretend to be something which they are not, and which are sold to them with intent to deceive.

One of the most reputable firms in this country manufacturing food products is Bishop & Co., of California. Their goods are recognized everywhere as being of superior quality. We found in some of their goods an aniline dye, and we submitted our findings to the company. They at once wrote that that was impossible; that they had never had a particle of aniline dye in their establishment; that they would not use it. In reply we said, "Please send us some of the dyes you use," and they sent us those dyes. We examined those articles, and we found plainly marked and certified by the manufacturer that they were a pure vegetable color, and Bishop & Co. had bought them on that understanding and certificate, yet the color was nothing in the world but an aniline dye.

Now, then, that example illustrates very well how manufacturers may often deny the existence of so-called adulterants of their products, because they themselves have been deceived and had used things without thinking of taking the trouble to look into the matter, and relying entirely upon the certificate of the dealer. They are themselves thus led into committing offenses against the law. This firm was making goods where the law forbids any coloring matter, except of vegetable origin, yet they might have been prosecuted under the laws of that State, and really they would have been entirely innocent of intending to offend against those laws. So that you see the attempt to deceive often originates right where the stuff is manufactured.

Now, we have a number of these bodies which are sold under names which do not give any idea of their composition.

I have here a letter from Bishop & Co. which illustrates this point. They write as follows:

LOS ANGELES, CAL., November 21, 1901.

H. W. WILEY,
Washington, D. C.

DEAR SIR: Your favor of the 11th instant, giving the results of your analysis of our grape fruitate, guava jam, and pickled figs, received. We thank you for submitting same.

We think there must be some error in regard to there being benzoic acid in our grape fruitate, as we have never used this in our products. We aim to put up pure goods, but in the fruits that are of a red color—namely, berries, guava, and currants—we use some red coloring to make the appearance better. We have for years used Kolmstan's sugar-red color, which, we understand, passed the pure-food laws of Ohio, and which Mr. Kolmstan assured us was purely vegetable color; hence we are surprised that your analysis shows coal-tar dye in our guava jam.

We do not put coloring matter in to cheapen the goods in any manner, but only to aid the appearance. We are trying to make a name on our goods as pure foods.

Now, that simply illustrates the point. It is simply an example of one of many letters we have received when we submitted these analyses to the manufacturers of the foods.

I will not take the time of this committee by showing you many of these, but I will simply call your attention to the fact that these preservatives and coloring matters are sold under false names, and unless a manufacturer takes the trouble in every case to have an analysis made himself, he often does not know what he is getting, and hence he is often genuinely surprised—honestly surprised—when he finds anything deleterious in his goods.

Mr. COOMBS. I judge from what you say that every manufacturer depends on some other manufacturer for some part, some ingredient, with which he himself manufactures and produces his result.

Mr. WILEY. I think that is quite true, to a certain extent.

Mr. COOMBS. In other words, trade is carried on by specialties, specialties in particular lines. In putting up fruits a man pays no regard to the details of his coloring materials. He buys them the same as he would buy sugar or other things.

Mr. WILEY. I think as a rule the manufacturer is content to accept the assurance of another manufacturer that what he gets is the article represented. That is, I think, the common rule of the trade. Of course, Mr. Bishop will never be caught by such a subterfuge as this again, because his attention has been called to it, and he will endeavor to secure, and will secure, coloring matters which are not contrary to law. Now, we found materials of this description [showing a preservative] made up by this company—preservaline—sold for six different prices, for six different purposes, and they are all absolutely the same in composition in every case, and the name on the package in no case gave any indication of what the materials were. These materials are borax and common salt. This particular one [exhibiting sample] is sulphide of soda, which is a common preservative for use in meat, and therefore is colored red, so as to be the color of meat. But there were six of these sold at different prices and for different purposes.

Mr. COOMBS. What is that aniline dye?

Mr. WILEY. It is made of coal tar. It is one of the dyes made from coal tar. The aniline is a product of coal tar which in itself is colorless, but when in combination with other bodies produces all the colors.

Mr. COOMBS. They use that in wine?

Mr. WILEY. Yes, sir; that brings me to my next point. About a year and a half ago we got a letter from the California Wine Association that a wine was sold in Paducah, Ky., where they had an agent also, purporting to be exactly the same character as the wine they sold, but which was being sold at a much less price. We replied, saying that if they would send us samples we would see what it was. They did send samples.

Here are some which I present to the committee. These are absolutely synthetic wines; that is, they never saw a grape or a vine. There is not a particle of substance in these wines that ever came from a vineyard. We found that they were purported to be made in Ohio, but we never could find where they were made. They have a pretty good color and flavor, and have the odor of the genuine article.

Mr. RICHARDSON. There is no wine in them?

Mr. WILEY. No grape juice. There is alcohol, of course, but no grape juice.

Mr. COOMBS. Was it sold as California wine?

Mr. WILEY. No, sir; I think not. I think it was sold as Ohio wine.

Mr. RICHARDSON. What is it made of?

Mr. WILEY. Coal-tar dye, tannin, sugar, and glucose.

Mr. RICHARDSON. Does it so nearly resemble the grape wine that a man would be deceived in it?

Mr. WILEY. Not an expert, but an ordinary wine drinker would be unable to tell whether it was pure wine or not. The expert, of course, would detect it at once.

Mr. RICHARDSON. Is there anything harmful in it?

Mr. WILEY. I do not know that it is harmful. We found salysilic acid in this wine; that is usually regarded as deleterious but is not necessarily harmful. It was put in to prevent fermentation. We also have these colors [showing samples] which we found when we made artificial dyes of them, corresponding with those in these wines. They are marked wine colors and are sold to those who fabricate wine, for making this article.

Now, there is a general opinion that a great deal of our wine is a fabricated article. I do not, Mr. Chairman, share that view myself. Wine is now so cheap a product that there would be really no great advantage to the makers of wines except in a particular case like this, remote from a vineyard, where wine could be made up and sold cheaper than the genuine article. There are doubtless fortified wines changed from the natural state, but I think most of our wines have their origin in the vineyard.

Mr. COOMBS. Fortified wines—fortified with alcohol?

Mr. WILEY. Yes, fortified wines.

Mr. COOMBS. Not red wines?

Mr. WILEY. No, sir; any alcohol added to the ordinary red wine other than that from the grape must be considered an adulteration.

Mr. COOMBS. Do you mean the white wines?

Mr. WILEY. Ports and sherries and sweet wines, which have always added alcohol. But the law provides that in making these fortified wines the alcohol added shall be grape alcohol, that is, an alcohol made from the vine, and when made in that way they are perfectly legal, and what we expect to buy, because when we buy a port or a sherry we know what it is, and expect to find more alcohol than is produced by the natural fermentation.

This illustrates simply some of the things which we have discovered in this particular direction. Now, I almost hate to undertake to show this committee some samples of these forms of adulteration of which you have heard most, and yet I think perhaps they would be most useful to you; I mean to say adulterations of fruit products. These are the adulterations of which you have heard most in the hear-

ings before you, and we have quite a large number of samples of products of this kind.

I wish in the first place to make myself as plainly understood as possible. I have been one of those who even from the earliest times have believed that glucose is a wholesome food. I took that ground years ago when glucose was a much less pure article than it is now; and I of course at that time made that statement with this proviso, that if it contained substances deleterious to health, as the result of manufacture, it was not wholesome, but that the substance known as glucose, which I will explain to you in the common acceptation of the word, and also in the chemical acceptation, unless it has some residual substance which it ought not to have as a result of manufacture, is a wholesome article of food.

When I first proclaimed that doctrine my friends, the bee keepers, were very indignant, because it was then used as an adulterant for honey, and they had proclaimed that it was deleterious and was not fit for food; and they based their position largely on that point. I, of course, always have thought the adulteration of honey to be wrong, but not from that point of view, and so I became unpopular; and largely because of those opinions considerable bitter denunciation was indulged in against me, especially in the bee journals. But the bee keepers have now universally taken the view that I claimed was just, and no longer claim that the addition of glucose is injurious to health.

I have here a sample of glucose [exhibiting sample]. One member of the committee asked the other day for such a sample. Some one else may have shown it, but I brought this along. There is the glucose of commerce [indicating], and I judge from its consistency that it is what is known as confectioner's glucose, viz., what is used by the candy makers. I want to explain how it was made twenty years ago and how it is made now, in order that you may appreciate the difference. Glucose is made in this country exclusively from Indian corn or maize. In Europe it is made exclusively from the potato. So that the term in Europe does not imply the same origin as in this country.

Now, the term "glucose," commercially means an article like that which I show you, made from Indian cornstarch. That is the meaning of the commercial term in this country. In chemistry it means quite a different thing. In chemistry it means a sweet product, and the term applies to half a dozen different kinds of sugars which have a sweet taste; not particularly this one. In fact, it applies less to this one than to any other. While commercially it means this product, if you make a solid sugar out of this product, that in this country is called grape sugar.

In other words, when you go into the market, when the brewer goes into the market and buys grape sugar he knows perfectly well that he does not get the sugar that exists in the grape; he has no idea that he does; it is a perfectly well understood commercial term. It is understood universally that the grape sugar is the solid sugar made in the same way as the liquid glucose, only carried further in the process of conversion than this is.

Now, this is made by the action of hydrochloric acid on starch. The beginning of the process is exactly the same as that in the manufacture of starch. The Indian corn is first soaked in water for thirty-six or forty-eight hours, and a little sulphurous acid may be added to prevent fermentation. It is then mashed in rolls, setting free the starch

granules, and afterwards the husk and the germ are separated by a process of gravity, the hull being heavier and the germ being lighter, and it is a certain mixture of starch and water by which they are separated. The germs come to the top and the husk goes to the bottom. Those bodies are used as cattle food and for making corn oil, and they are numbered among the by-products of the factory.

This starch which is thus separated can either be made into ordinary or commercial starch by being dried, or it can be taken in its moist state in combination with the water and beaten up into a cream and converted into sugar by the addition of an acid—sulphuric acid was used twenty years ago in large wooden tanks, the starch paste and acid were put in these tanks and steam was blown through for a certain time, until the conversion had gone far enough to produce this product, or still further to produce the grape sugar.

Then the sulphuric acid was separated. For this purpose marble dust was used, and that combined with the sulphuric acid and formed gypsum, and the carbonic acid escaped as a gas. Now, the gypsum was separated by filtering, and the liquor containing the product which was ready for evaporation passed through the filter cloths and it was then put through boneblack and afterwards evaporated to the consistency which I have shown you in that bottle.

If you wanted to make grape sugar, this conversion was carried further. Glucose is more than half dextrin; that is, dextrin is not a sugar at all, is not considered a sugar, and that material is probably more than half dextrin—and of course 8 or 10 per cent water—and most of the rest is known as dextrose, which is the same as grape sugar in chemistry.

I will say that this old process of making glucose is still used in Europe. Some of you may have read a year ago of a remarkable case of poisoning by arsenic in England from beer drinking. Thousands of people were ill, and hundreds of people died; and after a long investigation they found that it came from the glucose or grape sugar used in brewing. When they proved that, then they found that it came from the sulphuric acid used in converting the starch into sugar, and they found that the acid was made from iron pyrites, which contained arsenic; and so the poisoned beer was accounted for.

Long ago we have stopped that process here. We use hydrochloric (muriatic) acid, and we use but one-half of 1 per cent, and convert the starch under high pressure, steam pressure, so that a very little acid converts a great deal of starch; and then instead of trying to remove that acid, that hydrochloric acid, we add soda enough to neutralize it, and that makes a little common salt, which nobody objects to, and that is left in the product. So there is no longer the trouble that was experienced in making old-fashioned glucose in removing an objectionable residuum. I think I have shown you by this brief description of the process that glucose is a wholesome and pure article of food in as far as any residual matter is contained and free from the objections that were formerly urged against it.

Mr. MANN. Is that glucose sweet?

Mr. WILEY. Yes, sir; it has a mild, sweet taste, and of course the more dextrine it has the less sweet taste it has, because dextrine is almost tasteless. And when you convert it into sugar, grape sugar, it has still a sweet taste. It is estimated by persons tasting it, and that is the only way we can estimate it, that grape sugar is two and one-

half times less sweet than cane sugar. This glucose is the basis of most of the fruit products which have been discussed before this committee. I have said, and always have said, and still believe, that the admixture of this material with the fruit product is not in any sense prejudicial to health, at least for a healthy adult, nor is it in any sense a fraud, provided that it is done with the full understanding of the maker and the buyer, the seller and the consumer.

I realize—and I will discuss that in another part of my remarks before the committee—that many scientific men disagree with me in this respect, men who claim that the substitution of glucose, although it is a wholesome food, for another wholesome food is deleterious to health. There is a strong belief among some scientific men that glucose is deleterious.

If you feed bees glucose, it will kill them. You can feed them the sirup of cane sugar, and while they will not thrive on it, it will keep them alive, and you can keep them over a hard winter and through the early spring on it, before the flowers come out, by feeding them cane sugar. But the bee has no provision made by nature for digesting glucose. It is only partially digested, and the bee has no means provided for completing the digestion, and that is the reason they die, because they are starved to death, and not because the glucose contains any poisonous substance.

Now, you have had described here by gentlemen who appeared before you, in a perfectly frank and honest way (I am glad to see that these gentlemen have laid all the facts in their possession before the committee, and I would not have expected anything else, because they came here to explain the truth as they saw it), the way in which these various fruit products are made. I will not dwell longer on that; you are sufficiently informed. I want to show you what we regard as the genuine product of which those are the imitations.

I will first present to you a sample of pure crab-apple jelly, made in August, 1901, out of sound crab apples and sugar, with no artificial color and no preservative, no added substance of any kind except the sugar and the juice of the crab apples [exhibiting specimen].

Mr. COOMBS. That is the pure stuff?

Mr. WILEY. Yes, sir; the pure stuff. These samples were all obtained from the housewives who made them. They were not obtained in the market, but I went to the ladies who made these and got these samples. Here is a pure currant jelly made July 1, 1901; 1 pound of sugar was used to 1 pint of the juice. I will explain to you in a moment how this juice is obtained. Here is a pure quince jelly [exhibiting specimen]. The lady who gave me this did not remember just when it was made, but it was some time last summer or autumn. This is made of pure juice of the quince and sugar. That is a beautiful article, as you will see by holding it up to the light. Here is a pure currant jelly made of pure sugar and the juice of currants.

Mr. COOMBS. The only question as to the purity of these depends on whether the sugar was pure or not.

Mr. WILEY. Yes, sir; on whether the sugar was pure. I remember, of course, as a boy, seeing my mother make these things, but my memory was not very fresh, and I went to see one of these ladies and asked about the procedure. In the case of the crab apple, sound and nicely colored apples are used. The fruit is first washed carefully and then dried. The bloom at the top of the apple and the stem are cut

out, but the apple is not pared, but is simply cut and placed in the kettle with a little water and boiled until it is a soft pulp. It is then squeezed in a bag or colander with a fine sieve, and the juice is pressed out. Then the universal custom is, as I found, to add an equal volume of sugar to the volume of the juice—that is, a pint to a pound, or a pound to a pint, of pure granulated sugar.

I will say to the committee that although made by a trust, which some people do not like, the granulated sugar of commerce is a remarkably pure article.

Mr. COOMBS. How about the pulverized sugar?

Mr. WILEY. That is almost pure also. I have never been able to find a sample of pulverized sugar that was not almost perfectly pure.

Mr. COOMBS. Might it not be stretched after the retailers get hold of it?

Mr. WILEY. We have bought all the samples that we have had from the retailers, and we have had many hundreds of them from cheap and dear retailers. I have hoped sometime to find an adulterated sugar from the retailers, but so far have failed.

Mr. RICHARDSON. Yet the popular opinion is that that is one of the most frequently adulterated articles.

Mr. WILEY. That may be, but it is not so.

Mr. RICHARDSON. I am very glad that you have removed an apprehension from my stomach.

Mr. WILEY. One gentleman here said that he was getting so now that he was afraid to eat anything. I do not think that you gentlemen need be alarmed.

Mr. MANN. You do not look as though you had been afraid.

Mr. WILEY. I never hesitate because of a fear that some food may be adulterated.

This mixture is boiled and a little taken out from time to time to see when the "jelling" process is complete. Now, the jelling principle is known as pectose, and it exists in all fruits, in some of them more than others. For instance, a housewife will tell you that grapes are harder to jell than apples, simply because they contain less pectose than apples.

Mr. MANN. Grapes are harder to jell? I guess you have it wrong.

Mr. WILEY. I was told so.

Mr. MANN. Ripe grapes are.

Mr. WILEY. I do not know; but this lady told me that she found grapes more difficult to jell. The crab apple is especially rich in pectose.

Mr. COOMBS. Would you mind a diversion right there? If the committee will excuse me. In California we have the pickling of the ripe olive. You know the ordinary olive that we have on the table here is a green olive, not mature. In California we pickle them ripe, and the people who like olives prefer them; but I never see any of them in this country. I notice that the members of my family who enjoy them at home have called for them several times at the hotel and on the cars, but they do not keep them. What is the reason of that? Do you know of that preservation of the fruit?

Mr. WILEY. I have eaten the ripe olives.

Mr. COOMBS. Do you enjoy them?

Mr. WILEY. Very much indeed.

Mr. COOMBS. They do not have them here?

Mr. WILEY. No, sir; I have never seen them except in California. I would suppose that people are used to the green olives, and associate that color with the olives, and if they were given to them ripe they would not like them.

Mr. COOMBS. You think it is not in the market?

Mr. WILEY. No, sir. Now, the pectose which is in the fruit is entirely different from the gelatin of the animal product. It has the same composition as sugar, and belongs to the carbohydrate family. So that they are entirely different substances. Now, you have learned how the principal jellies of commerce are obtained. I think it is quite difficult to go into any of our stores, even the highest grade stores, and get jellies which are made in the manner which I have described.

Mr. Graeme Stewart testified before the Senate committee—and I have a transcript of his testimony which will be inserted later—that in his opinion 95 per cent of the jellies on the market were made of what he called adulterated substances—that is, they were adulterated jellies, deleterious jellies, made as has been described before this committee. I think that is a pretty broad statement, and I think there is a larger proportion of it pure, but I can not go into that point. I simply wanted to show you some of the things that we have found in these jellies of commerce. You have been told that they were made of apple cores and parings as a basis. That, of course, no one denies; it is a well-known fact. Five or six years ago the desiccated apples made in this country were refused admission to Germany on the ground that they contained zinc in proportions deleterious to health.

The Secretary of Agriculture directed me to make an investigation and see if it were true. I found it was true, and that they did contain zinc. To make this investigation I went to the factories in New York, and stayed quite a while where they make this desiccated fruit, and I saw how they did it, and I found out where the zinc came from. It did not take more than an hour to find out that, and it was pointed out to the people in a bulletin issued from the Department how to avoid this zinc, and thus remove this embargo; and most of the manufacturers have acted on that suggestion.

But I, of course, was interested also in everything that was going on about the factory, and I saw that the parings and cores were carefully preserved and utilized, and also I noticed that when the apples were pared they were sliced by machinery, and they then went to drying kilns, and a number of girls were placed on each side and whenever an imperfect section of an apple was visible one of them would pick it up and either throw it out or cut out the imperfect part, and all of these imperfect parts went into the pile of parings and cores, so that that contained all the parts of the apple except the good parts, which can not be used for the desiccation.

At that time I asked where this went, and was told that they shipped it to Europe—most of it to France, where it was used in making champagne. I do not know how that may be. I drink so little champagne that I took little interest in that. But now most of that goes to the manufacturers of the jellies of commerce. And I think it is a most worthy object, to utilize this material. I think it ought to be utilized. In fact, if you were to cut off from the manufacturer to-day the by-products which forty years ago were thrown away, you would cut the profits out of almost every manufacturing establishment in the world.

Take such a simple thing as the manufacture of steel. The by-products to-day, especially in Europe, of the manufacture of steel are almost the sole profit which the manufacturers make. They make the steel, and are beginning to make it in this country, from an ore that contains so much phosphorus that twenty years ago it would have been deemed utterly worthless for making steel or iron of any kind. The chemist discovered that he could extract that phosphorus in a form extremely useful to agriculture, and to-day they are selling in Europe nearly 2,000,000 tons of phosphate slag from the steel works at a price of from \$7 to \$9 a ton—almost half as much as they get for the steel itself.

Mr. COOMBS. How about the phosphate in the gold ore?

Mr. WILEY. I never investigated that part of the question, so I do not know how that could be utilized.

Mr. COOMBS. That is utilized, is it not?

Mr. WILEY. I have no doubt it is. I have been in the factories where this phosphate slag is made and know about what it is.

Mr. COOMBS. The phosphate is not the metal itself, but it is in the ore.

Mr. WILEY. It is the phosphoric acid in the ore that is used for agricultural purposes. And so every branch of agriculture utilizes those products in this way.

Mr. RICHARDSON. Yes; take cotton seed.

Mr. WILEY. I suppose that you can remember when that was thrown away, a good deal of it?

Mr. RICHARDSON. Thrown away in the fields. And now it forms a great proportion of the profits. The hulls, you know, are made into the most admirable food for cattle, mixed with bran, and the oil and all that—

Mr. WILEY. The one item of the oil alone in the seed means success or failure to the agriculture of the South. If you should destroy the market for cotton-seed oil, you would strike a blow at the very vitals of Southern agriculture. It is something that takes absolutely nothing from the soil, and it is a pure gift from the Creator.

Mr. RICHARDSON. A most excellent cattle food is made from the cotton seed.

Mr. WILEY. It is also a good fertilizer.

Mr. RICHARDSON. Yes, sir; fine. And it is also believed to be a better food for cattle than before, after the strength of the cotton-seed oil is taken from it.

Mr. COOMBS. You mean the seed, after the oil is extracted?

Mr. RICHARDSON. Yes; after the oil is extracted. They mix it with bran and use it as a cattle food.

Mr. WILEY. The cotton seed is sold all over the North as well as the South, and the cake is used for cattle food; and the price is \$20 or more a ton for that material.

Mr. RICHARDSON. Which used to be thrown away, absolutely.

Mr. WILEY. So that I say the utilization of waste products in this way is something that should always receive attention, as it means so much to the agriculturist; and also the science of hygiene, so far as I can see, can have no objection to the utilization of these products.

I want to show you something that you have not been informed about in particular. We have not here the samples to show which were examined, but we have duplicates of those that were exam-

ined. That is, two samples were bought in the open market, and we may assume that the other which was examined was of the same constitution; so that we can show you the duplicate samples, bottled at the same time, and doubtless representing the same product, as the coloring matters that we extracted from them.

First, I will show you a piece of woolen cloth in an uncolored state, and then the pieces dyed with the colors we extracted from these fruit products. We get the color from these materials and color the wool with the dye so extracted. There is another little fault about this first sample, and that is that it is not the fruit that it pretends to be on the label, but I want to show you now simply the dyestuff that we got out of it [exhibiting samples].

It is admitted that all the fruit that is in these—that is, the fruit basis—is apple, and hence all this, if sold at all as a fruit jelly, should be sold as an apple jelly [exhibiting sample]. There is one particular case that I would like for the committee to examine carefully because this pretends to be strawberry preserves. Now, there has been a little difference of opinion as to the number of strawberries in that mixture. Some of us make it eleven berries and some twelve [exhibiting jar of preserves]. This is simply a mass of glucose in which eleven or twelve strawberries have been suspended, and that is sold as strawberry preserves. You can see the strawberries in there. They are hardly shaking hands with each other, they are so far apart.

Each of these samples is labeled so that the committee can look them over.

There is another thing about fruits to which I would call your attention, and that is that the ash of all fruits is strongly alkaline. If you burn a fruit and examine the ash you will find that it is alkaline; that is, it contains carbonate of potash, soda, or lime. In the case of the seeds this is not true, because they contain a large quantity of phosphoric acid, and if you burn them the ash is likely to be neutral or acid. But if we burn the fruit, we can tell whether any mineral acid has been added, and we find in many of these cases that it is a mineral acid, showing that mineral acid has been added.

So also we find that cream of tartar has been added as the acid property of the fruit jelly in one of these samples. Here is the phosphoric acid that we got out of one of these cans, and also here in another state of combination, as a yellow product, in which form we separate it [showing samples]. That acid must have been added, for the reason that it is known by the manufacturers that the addition of phosphoric acid to the dry fruit makes the extraction of the pectose an easier matter, and hence it is added not in anyway as an adulterant, but simply to favor the extraction of this material; and I do not think it is objectionable to add a small quantity of that material for that purpose.

It was stated to the committee that the glucose was put in because the jelly made from pure fruit and sugar would crystallize. I want to say that that is a misapprehension of the facts. These jellies which I show you are nearly a year old, and they show no signs of crystallization. In point of fact, when you deal with a fruit juice and pure sugar the fruit juice always contains an organic acid. All fruits contain free acid. Their flavor depends on it to a certain extent. Apples contain malic acid, and fruits such as oranges and lemons citric acid, and grapes tartaric acid. Now, when you boil sugar in these acid juices it

becomes inverted. It is no longer plain sugar, but chemical glucose, a mixture of levulose and dextrose.

When you boil sugar with pure fruit juice it becomes partially inverted and does not crystallize. I admit that if you boil it with glucose, it will crystallize. The important fact here is not that the sugar crystallizes, or fails to crystallize, but it is the failure to boil the sugar with the natural fruit juice that inverts it, and that is the trouble with these manufacturers when they use cane sugar; they have no natural fruit acid to invert the sugar.

Mr. MANN. Do you say that jelly made from pure fruit juice and cane sugar will never crystallize?

Mr. WILEY. No, sir; not "never." Probably, if you kept that for two or three years it might crystallize, and especially if you kept it in a warm place. It would be much more likely to crystallize in the summer than in cooler weather.

Mr. MANN. Would the movement of jelly in transportation have any effect upon it?

Mr. WILEY. Yes, sir; it has. It is a well known fact that movement favors crystallization. That is, if you keep a body in movement it is more apt to crystallize than if you keep it quiet. Many of you who have been in a maple-sugar grove know how the sugar, after boiling in a kettle, is stirred in order to make it crystallize. It is a well known fact that movement, any movement, favors crystallization, and if you do not invert your sugar by boiling, then you will have trouble. Housewives prefer acid fruits for making jelly, such as the crab apple and the currant; but if you take a very sweet apple which contains very little acid, I have no doubt you would have trouble with crystallization.

Mr. MANN. Housewives make jelly from green or partially green fruits.

Mr. WILEY. If they did that, they would find more acids in them.

Mr. MANN. Housewives never want very ripe currants.

Mr. WILEY. Because they are too sweet; that is, their acid is too far gone. That is correct, and hence they get a better product from a fruit that contains more acid.

Here is an interesting sample for the committee. Here is a jelly, called lemon jelly, which we would expect to contain citric acid, but it contains tartaric acid. Here is the cream of tartar we extracted from a portion of this [exhibiting sample], and in this little vial we have benzoic acid from the same sample, the benzoic acid having been used as a preservative.

I will hasten with this, Mr. Chairman, because I want to get through with this part of my subject to-day, and on another occasion, if agreeable to the committee, I will discuss the subject mentioned by the chairman this morning, namely, the features of the various bills you have before you for your consideration.

I want to show you one of the most persistent and oldest adulterations, and that is the one that the bee people so justly objected to. Here is an absolutely pure honey [exhibiting sample]. It was given to me under the certificate of the man who kept the bees, and the chemical analysis confirmed his statement. Pure honey is the nectar of flowers gathered and stored by bees; that is the definition of pure honey which everybody accepts. Now, here is an artificial honey which contains some honey, to be sure, but a considerable quantity of glucose.

I will not mention the name of the manufacturer, because he is one of the gentlemen who appeared before this committee.

Mr. MANN. If he was one of the Chicago gentlemen, I hope that you will mention the name.

Mr. WILEY. It is very curious that it does not happen to be one of the gentlemen from Chicago. Adulteration is not confined to Chicago; it is spread all over the country.

Mr. MANN. I presumed that he was not from Chicago.

Mr. WILEY. No, sir; he was not. I will state for the benefit of the committee that all those colors, all the colors from the jellies, and all the phosphoric acid and cream of tartar and benzoic acid exhibited were taken from samples made in Chicago.

Mr. COOMBS. Speaking about honey and counterfeiting honey so as to have the appearance of the honey in the original comb just as taken from the hive, does not that exist?

Mr. WILEY. Some of the adulterated honey has a piece of the comb floating in the bottle—

Mr. COOMBS. I mean the counterfeiting of honey in the original state as taken from the hive. Is there any counterfeiting in that way?

Mr. WILEY. A great many attempts have been made to make an artificial comb, and they have been made and filled in an artificial way. I got into trouble once by saying that that product was on the market. I do not now believe that any such honeys have ever been commercially exploited, but patents have been on file for many years for making artificial combs.

Mr. COOMBS. But they have not been successful?

Mr. WILEY. No, sir. Only in case of comb foundations. If there is any adulterated honey at all sold in the comb, it is where the bees have been fed sugar sirup instead of being allowed to gather their honey from the flowers.

Mr. COOMBS. The bees will be honest when you give them a chance?

Mr. WILEY. Yes, sir; when you give them a chance.

Mr. MANN. If you give him a good chance, he will just be the other way. Now, the samples that you have submitted here show colored honey, and the artificial honey is dark colored, but of course that has nothing to do with the question of whether it is pure or adulterated.

Mr. WILEY. Nothing at all.

Mr. MANN. Pure honey is as apt to be dark as light?

Mr. WILEY. Yes, sir.

Mr. MANN. Depending only on the color of the flower it is made from?

Mr. WILEY. Yes, sir; for pure honey. In the adulterated article the color can be made to suit any taste.

There is one other point I wanted to present to this committee, and I have brought several of the bottles containing the samples, and any of you gentlemen who are keeping house can take a bottle and try it. That is pure cane sirup, made in Waycross, Ga. It has been stated before this committee that a pure cane sirup was usually very rank, and so strong tasting that the customers would not buy it. I think that statement is true to a certain extent, but mainly because it is so rare a thing to get hold of pure cane sirup that there is very little opportunity in this country of knowing what the flavor and taste of pure sirup are, and a great many people whom I have presented it to say when they taste it, "I can not eat that stuff; that is too strong and

rank." But when they eat it for a day or two they like it. It is a taste which grows on them.

It has the natural flavor of the cane, and I think it is delicious myself. I want the members of the committee who would like to try this to take it along.

The Secretary of Agriculture, at the request of the people of the South, has taken great interest in this industry, because it is growing in southern Mississippi and Alabama and South Carolina and Georgia and Florida, and throughout the whole South you will find hundreds of little mills making this product. I visited this region last year, and had some photographs made, and I have them here, which show you the primitive way in which this delicious product is made [showing photographs]. But it can not find a sale outside of the local market, because it is brought directly into competition with these artificially made sirups, and they are sold at a lower price than these people can afford to make and sell this sirup for.

I want to make a distinction between sirup and molasses. The maple sirup is a sugar made from the sap of the maple tree. The percentage of water in it may vary. You will find some maple sirup containing 30 per cent of water, but they vary greatly; some have only 20 per cent. The same is true of all sirups. If they are made for winter use they have more water in them than for summer use. But they are made from a pure sap.

Statistics show that there are thirty-five or forty million gallons of sorghum sirup made in this country each year. That is also a pure article, and the sugar-cane sirup is a pure product of the sugar cane, which is grown all over that region I have spoken of.

Mr. MANN. Will you answer me a question? As they used to make the sugar in the South from the cane, it was made by a process by which they had a great deal of good sirup left. My understanding has been that under the modern processes of making sugar in the large mills they did not have very much good sirup left. How is that?

Mr. WILEY. You are entirely correct in that belief. That is true, absolutely, and that is the reason I wanted to make a distinction between sirup and molasses. In the trade, molasses is the residue from the manufacture of sugar, and the sirup is the substance with the sugar all in it. That is the commercial distinction between the sirup and the molasses.

Chemically, there is no distinction at all, because you examine that material and you find exactly the materials in there that you find in molasses, not in the same proportions, but the same materials. That is the distinction that the trade makes.

The molasses is the residue from the manufacture of sugar. The old-fashioned New Orleans molasses, a wholesome product, was made in this way: The sap was boiled in kettles, a lot of the sugar was inverted during the process of boiling, and converted into uncrystallizable sugar. At the end of the boiling, the mass was taken out and crystallized, and thrown into hogsheads, the bottoms of which were perforated and covered with straw. This mass was put in there and allowed to stand until the molasses dripped through. That was the old-fashioned New Orleans molasses which some of you may have eaten when you were boys.

You do not get any of that now because the old methods of making sugar have, for commercial purposes, practically disappeared. You

can not compete with an open kettle with the man who makes sugar in a vacuum. The sirups which we now use on our tables are mostly made with glucose as a basis, and I have no objection to the glucose. These sirups are made with glucose, and flavored and colored with the residue of the refineries. Now, that is a concentrated essence of all the dirt that the sugar contains. It is highly colored, so that a little of it will color the glucose and give a good appearance and flavor to it which most people like.

Mr. MANN. Is it unhealthy?

Mr. WILEY. I do not think it is. Of course, there is a kind of molasses that I would consider as unwholesome, and that is where they use tin for increasing the brightness in the crystals of the sugar. That is a common practice in some of the cane-sugar factories. When they put the sugar in the centrifugal, they want to make a bright crystal and make it appear well to the eye, and they have a wash made of the salts of tin, and they squirt a little of that in, and it runs through with the molasses, and the molasses contains a little salts of tin, and these are unwholesome. But usually there is none of that in the residue of sugar refineries, because they do not use that process very much.

Mr. MANN. Is that molasses good to eat by itself?

Mr. WILEY. From the sugar refineries?

Mr. MANN. Yes, sir.

Mr. WILEY. No, sir; it is not a palatable material. It is not suitable for domestic consumption. Of course, diluted with glucose it makes a very well tasting and palatable diet. It does not appear to me quite fair that thousands and thousands of people in the South and all over this country making sugar cane and sorghum sirup and those making maple sirup should be forced to compete in the markets with other and cheaper materials sold under the same name. I do not think this sugar-cane sirup has ever been imitated in our markets, because it is not known yet. It is almost a local product. The old-fashioned New Orleans molasses, however, has been extensively imitated. I do not think you could buy a bottle of that pure product in the groceries of Washington.

Mr. MANN. That is the reason that I asked a while ago if one bottle would convert us to it, because if we were converted and could not get it, we would be in a bad fix.

Mr. WILEY. I think if you would use that for three or four mornings with buckwheat cakes—that is, not buckwheat cakes made with any other kind of flour, but the good, genuine buckwheat cakes—and use that sirup on it—

Mr. RICHARDSON. And have the buckwheat cakes cooked right.

Mr. WILEY. Yes, sir; you would want a pure baking powder or yeast powder to raise them.

Mr. RICHARDSON. And you would have to have them cooked right or they are very indigestible.

Mr. WILEY. Yes, sir. The art of cooking is almost one of the lost arts in this country. You would like it very much. It seems to me when these products of the South—these products of the cane and sorghum—come on to the market they should meet a fair competition, and that is all that the makers ask; nothing more. I think the farmer ought to be heard before this committee, and in some humble way I represent the farming interests.

Mr. RICHARDSON. In talking about that sugar stuff, you mean by that anything that is put out of a similar character and that is not the same ought to be so marked as to protect those people who are making these sirups.

Mr. WILEY. Yes, sir; that is my idea.

Mr. RICHARDSON. There ought to be a law that would reach them and punish them for not so doing.

Mr. WILEY. My idea is, and I will come to that in the second part of my remarks, that the agricultural interests are entitled to some hearing and some consideration, and that they are directly struck by the product of factories of molasses which sail under false colors, although the sirups and molasses made may be perfectly wholesome.

Mr. MANN. Do you think that it is hard to tell the difference between beet and cane sugar?

Mr. WILEY. It is not a difficult thing to do. In the raw state anybody can tell by the nostril at once. Raw beet sugar has a very offensive odor. Many of you have been in beet sugar-factories, and if you go into a factory when they are working their by-products you would think that you were in a soap factory, the odors are so unpleasant, whereas in the cane factory the air is filled with the sweet odor of the cane.

Mr. MANN. Is that so in a beet-sugar refinery?

Mr. WILEY. Yes, sir; where they are refining beet sugar you have the same bad odor in the refinery, whereas in refining the cane sugar it is not so.

Pure sugar made from beets and made from cane are absolutely identical; there is no difference at all between them in physical or chemical properties. In every property, chemical and physical, they are identical, and it is not easy to distinguish between granulated sugars made from cane and beets. But even then you are not absolutely at a loss, because if you take a pure cane sugar which polarizes, say, 99.9, and that is very near perfectly pure, and put it in a bottle and stopper it up, fill it not quite full, and then do the same thing with a beet sugar with the same polarization, and then after a certain time take the stoppers out and put the bottles to your nose, you can tell which is which. You may break, you may shatter, the vase as you will, but the smell of the beet will hang round it still.

Mr. MANN. I have been wondering whether it was not a fraud on the people to sell beet sugar for cane sugar.

Mr. WILEY. If they ask for cane sugar, yes. The makers of jams and jellies prefer cane sugar. If they ask for cane sugar I think it is right that they should get it; although making it as pure as they do now, I do not think anybody not an expert could tell the difference in the finished products. And nearly all the cane sugar used in England to-day is either for the jam and jelly trade or for the very rich families that prefer a yellow Demarara crystal, which is a bright amber crystal, very large, and very fashionable in England, although they can now make it out of beets, but originally it came from Demarara.

Mr. RICHARDSON. You said just now that the agricultural interests should be protected. I agree with that very fully. Down in our section the poorer class of people, and sometimes the better class of people, raise sorghum and have the sorghum sirup.

Mr. WILEY. Yes.

Mr. RICHARDSON. Now, I want you to tell us, do they make any imitation of the sorghum; is any made and put on the market that is not really sorghum?

Mr. WILEY. No, sir; I never heard of any.

Mr. RICHARDSON. If there is any adulteration or imitation of that, you do not know of it?

Mr. WILEY. No, sir.

Mr. RICHARDSON. They have not reached that yet?

Mr. WILEY. Sorghum has a pretty bad reputation of its own.

Mr. RICHARDSON. It is used a great deal, though.

Mr. WILEY. It would not be very profitable to imitate it.

Mr. RICHARDSON. It is commonly used among the common people.

Mr. WILEY. Yes; and it is a very wholesome and palatable article. I want to say that they make a sorghum sirup in Minnesota that compares with any table sirup in the world. They make a sirup that looks as pure and attractive as any that I have ever seen, and they are putting it out on the market now, and the gentleman who makes that sirup is one of the gentlemen who is anxious to have the sorghum protected against any misbranded product.

Mr. RICHARDSON. They do not misrepresent him?

Mr. WILEY. No, sir; but they are taking the market that he would have if it were properly protected by a law which was enforced.

Mr. LOVERING. Is there not as much reason that beet sugar should be labeled beet sugar as that oleomargarine should be labeled oleomargarine?

Mr. WILEY. The term "sugar" applies to the product that is made from the beet and the cane. Originally the word "sugar" was applied to honey. That was the only sugar that was known at first, and the old name was the name associated with honey. But when the cane came in, then it applied only to the cane product. Afterwards, when the beet sugar came in, about one hundred years ago, and ever since it has applied both to the sugar from cane and the beets, and these products are identical, as I say, when pure.

Mr. MANN. You say that in some cases the cane sugar may be better than beet sugar?

Mr. WILEY. Yes, sir.

Mr. MANN. And a man who wants to buy in the market should have an opportunity of obtaining what he wants?

Mr. WILEY. Yes; I think a man who sells beet sugar when his customer asks for cane sugar is deceiving his customer.

Mr. MANN. How does the seller, the merchant, know.

Mr. WILEY. He would have to inform himself. For chemical purposes we often want a pure cane sugar—that is, not a mixed substance; and when I want such a sugar I send to the American Sugar Refining Company and get a barrel or a half barrel and they fill my order with just what I want.

Mr. MANN. They will fill your order, but not mine.

Mr. WILEY. If you sent to a grocer here, he could not fill that order; he would not know.

Mr. MANN. I think he would do it without any trouble at all, but he would not know.

Mr. WILEY. If you asked him for cane sugar, he would tell you frankly that he did not know. Of course the chances are that it is. Of the 2,250,000 tons of sugar used in this country, nearly 2,000,000

tons are cane sugar, so that the chances are that you would get cane sugar.

Mr. COOMBS. Do you not think it would be a good idea to label cane sugar "cane" and beet sugar "beet," and also label the place from which it came, so that if a man wanted to patronize a particular industry he would have that privilege?

Mr. WILEY. I would not be in favor of doing that by legislative enactment, because sugar is sugar. When you buy a pound of granulated sugar it is the same stuff, wherever it is made. There is little difference there, I think, in practice. There is no deceit nor deception. You ask for sugar and get sugar. But, as I say, if you ask for cane sugar the grocer ought to frankly tell you, "I do not know whether I have it or not." But that is not a matter that it seems to me should be made a matter of legislative enactment.

Mr. MANN. There is a great deal of difference in the value or character of the sugar itself?

Mr. WILEY. Nobody could sell anybody raw beet sugar, because nobody could eat it; it is too nasty.

Mr. MANN. I mean in the matter of the quality—ought they to be obliged to label, showing the polariscope test of the sugar?

Mr. WILEY. I do not see any reason for that. The sugar shows itself what it is, if it is a granulated sugar. Nobody sells "coffee 'C' sugar" for granulated, that I know of.

Mr. LOVERING. Is there any difference between beet and cane sugar other than is established by the polariscope test?

Mr. WILEY. Yes, sir; there is no difference in the polariscope test at all. The difference is in that rank odor that is immeasurable. That is, you can not analyze or detect an odor.

Mr. COOMBS. You could not stamp it, either?

Mr. WILEY. No, sir; you could not stamp it either, but it is beet sugar, and it has that strong soapy odor when raw. That is all eliminated in the refining, except a soupçon of the odor, which remains, as the odor of flowers will remain in a vase after the flowers are gone. You do not know what it is nor why it is, but it is there.

Mr. MANN. Why, then, do people not all desire the cane sugar instead of the beet sugar?

Mr. WILEY. I think very likely they would if they did not prefer the refined article to the raw.

Mr. MANN. Why is that, if there is no difference in the sugar?

Mr. WILEY. Because there is this slight difference of odor that I have described, and they want their fruit to be as fragrant as possible. But the odor would only be detected by someone specially looking for it, and not by the general consumer.

Mr. MANN. It might affect the odor of the fruit?

Mr. WILEY. Possibly, if a low-grade beet sugar were used. The manufacturers themselves demand that the sugar be pure, so that their fruits will not be tainted with any odor of the beet.

The CHAIRMAN. The hour of adjournment has arrived.

Thereupon, at 12 o'clock m., the committee adjourned until to-morrow, March 22, at 10.30 o'clock a. m.

SATURDAY, *March 22, 1902.*

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

The CHAIRMAN. Dr. Wiley, you have the floor, if you please.

STATEMENT OF MR. W. W. WILEY—Continued.

Mr. CHAIRMAN AND GENTLEMEN: I will spend just a short time in closing the subject which I was trying to present to you yesterday, and then will devote the rest of the time assigned to me to a discussion of the subject as suggested by the chairman at the commencement of my address yesterday morning.

The first thing I would call attention to is the subject of spices and other condiments. The method of adulterating these substances has been presented to the committee pretty fully on the side of the manufacturers. These gentlemen, as I stated yesterday, have been perfectly frank and outspoken in what they have said, and have not sought to conceal any material facts, in so far as I have been able to determine. They have said the reason they adulterate their spices—that is, add substances which is not condimentary—is because the consumer demands it. That is, if you give the consumer a pure spice it would be too strong for his taste; he would not like it. I think perhaps that is quite true, Mr. Chairman, because so few consumers ever have the opportunity of ever knowing what a really pure condiment or spice is. But if you would take a man, for instance, from the southern part of our country, or any southern country, especially a tropical country, where the condiments are used in the pure state, and offer him one of our adulterated condiments which we use here, he would spurn it; it would not suit his taste at all. Taste is a matter of cultivation.

I have no objection, and no one has any objection that I know of, to a manufacturer or a dealer suiting his wares to the taste of his customers. I think he ought to do it; it is his business to do it, and there is no complaint of that at all; but what I wish to show you here are some of the materials which are used for softening these condiments and spices. Not one of them, as far as we are able to observe, has any substance in it which is at all detrimental to health in any particular; that is, they are innocuous substances. The first one here is hardly a condiment, but it is a cream of tartar substitute which we have found on the market, which is nothing in the world but infusorial earth—that is, those siliceous casts of diatoms which make a very porous earth, easily absorbing other substances, especially substances of a liquid nature, and which is largely used in the manufacture of dynamite to absorb the nitroglycerin.

If this is injurious to health at all it would be a mechanical injury. But it is a mistake to think that everything that enters the stomach that is not digestible is injurious. On the contrary, the digestive organs require a certain quantity of indigestible substances in order that their functions may be normal. A certain amount of food residue is excreted, and if you get food that is wholly digestible you stop the excrementitious action of the digestive organs altogether, and you would destroy the health and the life of that individual. So the mere

indigestibility of a substance is no argument at all that the substance is injurious to health.

Mr. TOMPKINS. That is the reason we have to eat our peck of dirt, I suppose?

Mr. WILEY. That is one reason. Another reason is, we can not avoid it.

Mr. RICHARDSON. Is it not a fact that the generally accepted idea about the digestibility and indigestibility of food is an erroneous idea—that everything taken into the stomach that is indigestible contributes to one's ill health?

Mr. WILEY. Yes, sir. That is entirely an error.

Mr. MANN. Does not every farmer know that his cattle must eat a certain amount of food which is not digestible or they will get thin and die?

Mr. WILEY. Yes; and so it is with us—we are only animals in our digestive functions. Therefore, all food to be wholesome must contain a certain amount of indigestible substance in order to maintain the functions of the digestive organs.

The CHAIRMAN. Will you please tell us what foods we eat are the most indigestible—the ordinary foods that we get at our tables?

Mr. WILEY. It depends on what the term "indigestible" means. In the sense I have just spoken of indigestibility it is anything which is not acted upon, dissolved, and assimilated by the digestive fluids. Such substances are indigestible. Now, with the ordinary foods, what we call the fiber is the most indigestible. That is, it is not acted upon to any extent by the digestive organs. Take the sugar beet for example. A good deal has been said in Congress, or will be said, about beets. There is the beet, solid, firm, and you would think it is composed mostly of solid matter, and yet in that beet there are only about 5 or 6 per cent of this fiber that I speak of, which makes up the structure of the cell walls, and those cell walls hold the fluids of the beet.

The substances of that beet, which are in the fluid state, are about 95 per cent of the whole beet, and yet the beet is absolutely solid, and that other 5 per cent of fiber, forming the cell walls which hold these fluids, give that beet its firmness and appearance of being a hard, solid vegetable. That 5 per cent is the most indigestible; nearly everything else in the beet is digestible except that. This will serve as an illustration.

It is the same way with cereals, although the matter in cereals which is indigestible, in the sense that I have used it, is a smaller proportion than in the case of the beet.

There is another sense in which a beet is indigestible, and that is when it is presented in such a form that it is not acted upon by the digestive fluids. Although it is usually or ordinarily acted upon by the digestive fluids, if it is presented in such a form that it is not acted upon by those fluids, it becomes an indigestible substance at once. For instance, foods must be balanced in order to be wholly digestible, as we say; that is, the materials of which the foods are composed must be presented in a certain proportion in order to meet the wants of the body and be acted upon by the digestive liquids. There must be a certain amount of fat and a certain amount of carbohydrates and of protein. If you increase the amount of one of those ingredients, although that ingredient itself is indigestible, it will pass through the

digestive organs, because the digestive organs digest the food only in certain proportions; and if any one portion of the food is in excess that portion will, to a certain extent, escape digestion.

For instance, if there is too much starch in a substance, some of it will be undigested. If you eat too much fat, there will be some of the fat undigested. If you eat too much lean meat, a portion of that will escape digestion.

That is the second sense in which food is indigestible. There is another sense in which we speak of a food being indigestible. We speak of a food being indigestible in relation to time. If an article is quickly digested, we are inclined to think it is more digestible than if it is slowly digested. That is not necessarily the case, however. The time alone does not determine the digestibility or the nutrient value of a food. It is fortunate that some of our foods are more slowly digested than others.

Meats are more quickly digested than cereals, and yet no one would say that meats are better foods than cereals for that reason. And if you are to undertake prolonged labor or exertion a cereal will be a better food than meat. It is well known that men and other animals that undergo, or have to undergo, hard or continuous labor for a long time, are best nourished by the cereals, and not by meats. The reason is that cereals are more slowly digested and thus afford to the furnace, as we might call it, which supplies the energy of work the fuel in that proportion in which it is required. That is the third sense in which we speak of the digestibility or indigestibility of a substance.

Mr. COOMBS. Would you presume that there was one period in the world when people lived upon flesh almost entirely—animals and game?

Mr. WILEY. I am not familiar with the early history of mankind.

Mr. COOMBS. You did not live then?

Mr. WILEY. I did not live at that time.

Mr. COOMBS. Is that not presumable?

Mr. WILEY. I think agriculture was an art which developed later in the history of the race, and naturally the food of early man was the food he could lay his hands on—game or fruit or nuts which he could reach; I think that is true.

Mr. COOMBS. Some countries do not have such a thing as nuts or any vegetable life to speak of, but a great deal of flesh.

Mr. WILEY. Of course in that case primitive man laid hold of any kind of food he could get, usually animal food, if that could be obtained.

To return to the subject of condiments for a few minutes. We have here the fillers, which are usually ground shells, with the exception of this infusorial earth I have here. All the others are of vegetable origin, ground cereals, peanuts or cocoanut shells, or anything of that kind. These substances make a good powder, which can be colored to resemble the spice or condiment to which it is to be added, so that in doing so it does not change the natural color of the product. Mustard is naturally yellow; therefore the filler for mustard should have a yellow tint. Peppers are of different colors, and so they make fillers for peppers of various colors; some are red, some are brown, and others according to the natural color of the peppers, the adulterant.

Now, as I say, there can be no objection to the use of these materials, but the objection is to selling them after that mixing as pure substances.

Mr. COOMBS. You have spoken of an earth. What is that formation?

Mr. WILEY. That is a siliceous crust formed by a very small living being belonging to the class known as diatoms. It is silica.

Mr. COOMBS. It is a deposit from the sea, is it not?

Mr. WILEY. Those diatoms, I think, usually live in salt water; yes.

Mr. COOMBS. It is entirely of animal life; might it not be vegetable?

Mr. WILEY. The infusoria are of animal life, but a great many vegetables, such as the diatoms, exude siliceous shells.

We admit that condiments are not as a rule eaten for their nutritious properties. It is not for the purpose of sustaining the body, but it is for the purpose of seasoning the food; but that has a certain relation to digestion. The activity of the digestive organs depends not only upon the food being nutritious—that is, having the elements which feed the body—but also upon its being palatable, because the organs which excrete the digestive liquids act as much through the imagination almost as through necessities. We know if we are very hungry and are brought into the sight of very palatable foods our digestive organs begin to work. We say our mouth waters. And not only does the mouth "water," but the stomach "waters." It is the association of this food with its taste, with its odor, and its effect upon the body that produces this lively action of cells which secrete the digestive fluids.

To secure the maximum function of the digestive organs the food must be as palatable as possible, and therefore condiments, while they add very little to the nutritive value of food, do add to the ease and efficiency of digestion, by supplying those substances which stimulate the digestive functions to produce liquors and solutions which contain the ferments producing digestion. So they have a direct hygienic function, and therefore any diminution of that property, the condimentary property, diminishes the value of those condiments and foods to which they are added just to that extent. And hence the value of the condiment as an aid to digestion and as a proper aid to digestion is diminished by adding this tasteless and yet innocuous substance to it.

Now, I will not dwell longer on that, unless some member has a question to ask—

Mr. MANN. Take red pepper, for instance. It is so strong that the average northern person does not use very much of it, while further south they use red pepper to a considerable extent. It is not used here because it is so strong. Probably it is not very usually adulterated—I do not know about that. Black pepper is often very strong, also; stronger than people want to take it. Is it any deception if that pepper is adulterated so that it will please the average appetite in the shape that it comes, in the shape that it is sold, reasonably cheap, because of the adulteration?

Mr. WILEY. It is not adulteration, I will say, in my mind, in my opinion, and I think in the opinion of almost all people who have studied this subject, if sold for what it is; but it is an adulteration if sold for the pure article.

Mr. MANN. Oh, well, we call a certain thing pepper. All peppers are not alike. You say if it is sold for what it is. Of course the term pepper is a generic term, and may be so applied in commerce now. Is it any fraud upon the consumer if he purchases pepper which has an adulteration in it, but which makes it more palatable to the consumer, and makes it something that he wants?

Mr. WILEY. I think it is, if he expects to get the other article, and one reason—

Mr. MANN. I suppose he gets what he is used to getting; he would think the other was adulterated or had something the matter with it if he got the pure article.

Mr. ADAMSON. Red pepper is of various degrees of strength or hotness, is it not?

Mr. WILEY. Yes.

Mr. ADAMSON. Is it the same way with black peppers?

Mr. WILEY. There are many varieties of peppers; yes.

Mr. ADAMSON. Why could you not blend peppers of various strengths and make an agreeable combination of the kind Mr. Mann suggested?

Mr. WILEY. I think that would be proper; that there would be no fraud if the purchaser were told it was a blended pepper.

Mr. MANN. It would be a fraud under this bill.

Mr. WILEY. To mix two peppers of different kinds?

Mr. MANN. To mix two peppers.

Mr. WILEY. It is all pepper.

Mr. MANN. But where you mix a pepper to reduce the strength it would be a fraud under this bill. It would make it cheaper.

Mr. WILEY. It would not necessarily be cheaper; it would not be so hot.

There is one variation of pepper, "paprica," which is very mild, and that is very popular. That is a pure pepper, and when people ask for it and get it of course that is not a fraud. I should think the mixing of that, though, with a strong red pepper, if it were for the purpose of diminishing the strength of the red pepper, without cheapening the price—and it would not cheapen it, for paprica is expensive—would not be a fraud if so stated and sold.

Mr. COOMBS. That is a berry?

Mr. WILEY. Yes; that is a variety of red pepper.

Mr. MANN. You think in this case tests should be made by the Department to ascertain whether these peppers are the proper standard or not?

Mr. WILEY. Will you repeat that?

Mr. MANN. I think the bill provides for the Department fixing a standard for such things.

Mr. WILEY. Yes; there is a provision in this bill (the Hepburn bill) which provides for the fixing of standards for food products, and that includes condiments, of course.

Mr. MANN. Would your idea of that be that those findings of the Department should be published to the world?

Mr. WILEY. I think so. That would be my idea.

Mr. MANN. Would become public property?

Mr. WILEY. The property of the public under that law; but these findings would not be accepted necessarily as evidence in court; that is, contrary evidence could be brought in.

Mr. MANN. I understand. I was requested to ask you that question.

Mr. WILEY. Yes, I think the greatest publicity should be given to the findings of a commission such as is contemplated by the Hepburn bill, because the findings, while no one would claim that they would be perfect, at least would have a value that has not yet been attained by evidence of that kind, because expert evidence before a court is

always tinged a little with the side that pays for it—that is natural—while this would be a totally unbiased body of experts, without reference to any courts or case.

Mr. RICHARDSON. As I understand it, then, you mean on that question that when this commission fixes the standard of pure food and thereby declares the ingredients that shall not go in there because they are unwholesome—you do not mean to say that when the courts come to pass upon a question of that kind that other and different evidence can not be brought in to show that they are mistaken?

Mr. WILEY. Certainly not; this standard has nothing of that kind in it.

Mr. RICHARDSON. You do not propose to prejudge the matter?

Mr. WILEY. Not at all.

Mr. RICHARDSON. It is just to get the opinion of experts on that question?

Mr. WILEY. That is all.

Mr. RICHARDSON. And let it go for what it is worth?

Mr. WILEY. Yes, sir.

Mr. DAVIS. Is it not true that there are more frauds perpetrated by using poorer qualities, mixing and blending poorer qualities of the same article with the better qualities of that article? Are not more frauds perpetrated in that way than in introducing foreign substances, as in the case, for instance, of a cigar? That is all tobacco. And the fraud there, if there is any fraud, consists in putting into that cigar a poorer tobacco, blended with the superior tobacco, and attempting to palm it off on the public as composed entirely of the better quality. Is it not also true that in the case of food products that the same practice is followed of putting a poorer quality of an article into the product, blended with the better quality? Is not that done more often than a foreign substance is introduced, and how are you going to deal with that subject? What standard are you going to fix?

Mr. WILEY. I think that is quite true. That is—

The CHAIRMAN. Let me suggest would it not be better to let the Doctor finish this portion of his address and take up the bill afterwards?

Mr. MANN. I have to go away early to-day and would like to ask a couple of questions.

Mr. DAVIS. You need not trouble with my question.

Mr. WILEY. I will come to that question later, Mr. Davis.

The CHAIRMAN. I hope we will conclude the examination of witnesses on Monday.

Mr. WILEY. I would be very glad to answer Mr. Mann's questions if I can.

Mr. MANN. It will not take very long. How would you label the preserve that had a very small amount of glucose in it?

Mr. WILEY. Of course this is my individual opinion, as we have no official control of such matters at all in our Department.

I have never been in favor of asking manufacturers to put on a label anything which reveals in any way any secret of their trade.

Mr. MANN. Then, before you are through with your statement, I wish you would for a moment take up this point. As I understand it, under all the bills before the committee it would require simply the exporters of meat products, and so forth, not to use borax or boracic acid in the preparation of their goods. You had that question up recently with reference to Germany. I understand that the British

trade demands goods that are prepared with borax or boracic acid, and before you are through, if you will, I wish you would explain in reference to what the effect of this bill or this legislation would be upon the export trade in that regard.

Mr. WILEY. The Secretary of Agriculture is authorized by the law as it stands to-day to examine food products intended for the countries requiring physical or chemical tests before admitting them for sale; that is, we are empowered now by the law to certify for shipment to foreign countries that the invoice contains nothing which is contrary to the laws of those countries.

I should think the procedure under the Hepburn bill would not go further than that. If we were to certify that the invoice contained no product prohibited in the country for which it is intended, that would entirely cover the purpose of the act.

Mr. MANN. I have here a letter from one of the principal exporting concerns of the world, in which they make this statement:

Whatever may be thought necessary to do for the protection of the domestic trade, we respectfully submit that where orders are received from foreign buyers requiring meats, and so forth, prepared in moderate quantities of borax or other harmless preservatives and where said preservatives are substitutes it is an unnecessary restriction of trade to prohibit the filling of such orders in this country. We mention borax because that is the article almost entirely used for English shipments.

Mr. WILEY. I should say the Hepburn bill as it stands to-day would not operate in any way to prohibit the use of any such substance. If it would so operate it should be amended.

Mr. MANN. You would not regard that as anything that was improper?

Mr. WILEY. On the contrary I would say that it was entirely and eminently proper to act in accordance with the demands of the foreign trade.

Mr. RICHARDSON. What objection have you to stating what the quantities in a commodity are? Say, for instance, in jelly. You put this and that in, and glucose, but you do not state the quantity of either one. Now, what reason have you got for not stating the proportion?

Mr. WILEY. Manufacturers of long experience learn certain ways of mixing bodies to produce the best results, and it is hardly fair to ask them to give the benefit of their years of experience to anybody else. That is the only objection in the world I have to it.

Mr. RICHARDSON. You do not think that they ought to be required to give away the knowledge they have acquired by study and application in their business?

Mr. WILEY. I do not; that is my opinion. And I would not ask any marking of goods to go further than to state plainly the contents or materials of which the object is made.

Mr. RICHARDSON. Because none of those ingredients, as I understand, are unwholesome; they do not injure anybody?

Mr. WILEY. Of course no one would favor the admixture of an injurious substance. That is universally prohibited or, if not, should be.

Mr. RICHARDSON. I admit, Doctor, that the trouble I have had about this matter is to know exactly how to mark those kinds of things. I believe all things that are unwholesome ought to be prohibited by law and there ought to be such prohibition put upon those substances

as will stop it; but the trouble with me in this investigation has been how to reach that point and not to put in anything that will be unfair or stop legitimate manufacture or commerce.

Mr. WILEY. I will come to that later in this discussion, and, unless the committee would like to ask further questions, I am going to close with just one thing, and that is to show the members of the committee a point that was brought up yesterday.

You wanted to know how you could know the difference between cane sugar and beet sugar. I have brought the two kinds as they come from the custom-house every day to our laboratory for our examination. One is a high-grade beet sugar, polarizing 94.95, and the other, cane sugar, polarizing 96. These are about the average grade sugars that come into this country. You will not have to take the labels; you will know, everyone of you, which is which—which is the beet sugar and which is the cane sugar. [Showing samples with labels removed.]

Which is the beet sugar?

Mr. TOMPKINS. This is it.

Mr. WILEY. That is right. You do not need the labels at all. That is the reason I said that raw beet sugar could not enter commerce. It is because of its bad taste and bad odor. One other thing, these two buckets show how these jellies are marked when they come into a State where the law requires that they shall be labeled. That is not the regular pasteur on this tub; that is, if they are sent into a State that does not have a pure-food law that label does not go on. But if they come into the District of Columbia they could not be sold here without that little pasteur on them. In my opinion there is nothing reprehensible in selling all this you can with this pasteur on it. It is absolutely in harmony with the principles of the Hepburn bill.

The CHAIRMAN. What does the pasteur recite?

Mr. WILEY. It says it is a pound of apple jelly, and it tells how much of each substance is in it; I do not want that particularly.

That is all we want; that is all we ask in trade.

Now, Mr. Chairman, I want to take up briefly the provisions of the two bills which we have under discussion; namely, the Hepburn bill and the Corliss bill, and I will spend the rest of my time in going over these bills. I am pretty familiar with them, and unless some one calls for some special section (I have the bills here to refer to in case you do) I will begin with the purpose of the bill.

The Hepburn bill is for the purpose of preventing adulteration, misbranding, and imitation of foods, beverages, candies, drugs, and condiments in the District of Columbia and the Territories, and for regulating in the States traffic therein, and for other purposes. The other bill (the Corliss bill) is to prevent the transportation of deleterious foods and drinks, and for the establishment of a food bureau in the Department of Agriculture. Those are the purposes of the two bills.

Now, the Hepburn bill does not seek to prevent transportation, but only to regulate it. There is nothing in the Hepburn bill which is aimed at the railroad companies, and there is no provision of the Hepburn bill whereby an officer of a railway company can be prosecuted. They regulate the traffic in it solely by going to the manufacturer on the one hand and the dealer at the other end of the line.

Now, I can not quite go as far as my friend from Alabama in prohibition. I am not a prohibitionist in any sense of the word. I believe every human being has a right to eat and drink and wear anything he pleases, provided he does not offend the laws or his neighbor.

Mr. RICHARDSON. But you agree with me about prohibition, do you not, prohibiting that which is unwholesome?

Mr. WILEY. We will come to that. I do not believe any man has a right to say to another man what is unwholesome. In my opinion that is illegal. He may advise him, and the Hepburn bill permits him to do that. He gets high scientific advice in regard to what is unwholesome, but then if he wants to eat the substance after all that is his business, and I do not believe any law ought to go so far as to prohibit any substance in a food product not a poison, which is plainly marked and the nature of which is publicly proclaimed by high authority. If this is done, trade should be absolutely unrestricted in such a commodity.

Now look for a moment at the legitimate result of the Corliss bill. It appoints one man sole judge of what is deleterious to health. It does not even require that that man shall have any qualifications whatever to judge.

Mr. ADAMSON. Entertaining the correct and liberal views just stated, do you not think that we, as members of Congress, can serve our country better by simply making your Department educational and advisory in this matter, and stopping there?

Mr. WILEY. I believe, sir, when you do that that it will hardly ever be necessary to institute suits. The American people will inform themselves—

Mr. ADAMSON. Give you all the money you need for that purpose?

Mr. WILEY. But if you leave out of the bill any method of enforcing its provisions, then there will be some people always who will take advantage of that omission to practice fraud. But I think you are exactly right, sir, in saying that you authorize us to study this question in that way—

Mr. ADAMSON. And publish your findings?

Mr. WILEY. Publish in this way the findings of the highest court, that it will do more than all the food prosecutions you can bring in a thousand years to correct the evils of which we complain.

Mr. ADAMSON. And be unattended by the necessary evils that attend these prosecutions?

Mr. WILEY. Of course there are some evils, but I think they are reduced to the minimum in the provisions of the Hepburn bill.

Mr. RICHARDSON. Who is going to see to the enforcement?

Mr. WILEY. There ought to be some way of enforcing the provisions of the bill and correcting violations of the law after they are pointed out. I stated yesterday that under the authority which Congress gives now of examining and publishing the result of our investigations we never publish anything until we submit it to the man whom we think has been guilty—never.

A moment in regard to the provisions of the Corliss bill to prevent the transportation of substances injurious to health. There is not a single article of food, not a single thing we eat, that is not injurious to health in some cases. Physicians will tell you that half the ills which humanity suffers are due to excesses in food. The injury which

excesses or the eating of food at the improper time will bring upon you is common and well recognized.

Under the provisions of the Corliss bill you could not send a bottle of wine from one State to another, you could not send a cask of whisky from one State to another; because you can get hundreds of people to testify that these things are injurious substances. You would absolutely paralyze interstate commerce, because if you had this law in force the commissioner, any food commissioner, who might be a Prohibitionist—they are good men and ought to hold office, more of them than do—but do you suppose there is a single food commissioner who is a Prohibitionist who would not decide that whisky is an injurious article to health? And he would be backed up by nearly the whole medical profession, and that too in the "quantities used or intended to be used."

There is no such provision in the Hepburn bill, no intention of such a provision.

Mr. MANN. What is the number of the Corliss bill; does anybody know?

Mr. WILEY. 12348. But there is another provision in the administrative feature of this bill that I desire to call attention to, and that is the one which permits the manufacturer of the food product to submit a formula to the food commissioner, and this formula shall either be approved or disapproved, and he shall enter in a book, which it has been proclaimed shall be a secret record, not open and public, this formula and his reasons for approving or disapproving the same, and that is the end of it. No one has any chance to see that formula, no one has even an opportunity to see why the food commissioner approved it or disapproved it, and it says that when so approved that articles of food which are made in harmony with this formula shall not be subject to this act. Where in the world can you find—

Mr. MANN. Why do you say a secret record?

Mr. TOMPKINS. What does the bill say?

Mr. MANN. The bill says that the formula shall be kept in the records of his office. It would undoubtedly be a public record.

Mr. WILEY. In the Mann bill it was a public record, but the gentlemen who made the change have stated before the Senate committee that they took out the word "public" deliberately—

Mr. MANN. It would be public just the same.

Mr. WILEY (continuing). So that it would be secret. They stated they took it out for a purpose.

Mr. COOMBS. I suppose that idea is to preserve any secrets of trade. Is that the idea?

Mr. WILEY. That is what they said it was for—to protect the firms in respect of their trade secrets.

Another point in the administrative feature to which I wish to call attention is that ostensibly it is put in the agricultural department. In the Mann bill that was not done, but a separate bureau was established. But if you will look for a moment at the Corliss bill you will see that the connection with the Department of Agriculture is wholly ostensible. The Corliss bill provides that the bureau shall be absolutely independent of the Secretary of Agriculture. The only point where it touches him at all is that he shall approve of the appointment of one official at a salary of \$2,000 a year. Have you ever seen any legislation, a bureau created in a great department of this Govern-

ment, in which the head of the department has absolutely nothing to say or do with its management—with the appointment of the officials in it, or their discharge? That is a new feature of legislation.

Mr. MANN. We created a census bureau independent, on the same terms.

Mr. WILEY. It is a part of what?

Mr. MANN. The Interior Department, and the Commissioner has power to appoint or discharge all officials.

Mr. WILEY. With the approval of the Secretary of the Interior?

Mr. MANN. That is what it said—

Mr. WILEY. In this bill the Secretary would only have the say in the matter of a chief chemist at a salary of \$2,000 a year.

Mr. MANN. Undoubtedly the conferees of the census bill would hold this provision of the Corliss bill unconstitutional.

Mr. WILEY. They would?

Mr. MANN. Yes; because they decided that Congress could not confer upon anybody subordinate to a Cabinet officer the appointment of officials in his bureau.

Mr. WILEY. Of course I am only discussing the bill as it is here. These points show how carelessly this bill has been drawn, how hastily it has been drawn, without the proper consideration, it seems to me, of all the points in the case.

Mr. RICHARDSON. I would like to call your attention to another part of the bill. The food commissioner is hereby authorized, it says, to employ such other chemists, inspectors, clerks, laborers, or other employees as may be necessary to carry out the provisions of this act. Who fixes the salaries?

Mr. WILEY. The food commissioner himself; it says so there.

Mr. WANGER. In a latter section.

Mr. MANN. Practically the salaries of all these officers are fixed by the Committee on Appropriations, where they are not fixed by law. The Committee on Appropriations fixes them in the annual appropriation bill. Is not that so?

Mr. WILEY. Yes; although it is true that in many departments employees are paid from a so-called "lump sum," and the compensation is fixed by the secretary of these departments. That is the case in many instances.

Mr. MANN. In some cases.

Mr. WILEY. Yes; I will not say many, but in some. Now I want to contrast those provisions—

Mr. MANN. You spoke of who was the author of the Corliss bill.

Mr. WILEY. Yes.

Mr. MANN. I think it would be proper to say that the Mann bill, so called, was introduced by me at the request of what assumes to be, at least, a national association of retail grocers, and also an association of wholesale grocers, concerning which I have no further information except as stated here; and the Corliss bill was an amended Mann bill, introduced by the request of the same people, or purporting to be the same people.

Mr. WILEY. Yes; they had a committee here authorized to make such changes in the bill as would be necessary, in its opinion, to obtain favorable consideration. These gentlemen have consulted with me frequently before the Corliss bill was introduced, through a committee which they sent here.

They hoped that all the advocates of a pure-food measure would concentrate upon this bill. They have been very honest and straightforward in their conferences. Mr. Grosvenor, as their representative, who is not here I believe to-day, conferred with me several weeks before this question came up in regard to the matter, and it was at my suggestion that the bill was put under the administration of the Department of Agriculture, but the suggestion that I made was that they should take the administrative features of the Hepburn bill; but they did not do that in their final conference, but presented it as I have presented it here to-day.

Mr. MANN. I advised these gentlemen by letter that my opinion was that if they wished to accomplish any legislation in the direction in which they were aiming that they had better direct their attention toward the modification of the Hepburn bill, which I thought certainly must meet the approval of the committee in its administrative features, and I thought the approval of the committee in its other features.

Mr. WILEY. The curious thing about it—and I am glad to hear what Mr. Mann says about it—is this: That the advocates you have had of the Corliss bill have all advocated it by calling attention to the bad effects of the State laws that have commissioners, and yet they want to put up a bill with a commissioner who has more absolute authority than any State commissioner could have and therefore, the ills of which they complain would only be intensified by adopting the provision they propose.

On the other hand, the Hepburn bill creates no new office. I want to say here that the first section of that bill, in regard to the creation of a bureau of chemistry, would be a work of supererogation, because Congress at its last session created such a bureau.

The only additional employees provided for under the Hepburn bill are those necessary to carry out the provisions of that act. So for efficiency and economy it seems to me that if they had adopted Mr. Mann's suggestion, and taken the administrative features of the Hepburn bill, it would have been a vast improvement over what has been proposed.

The CHAIRMAN. From the view that you can take of the subject at this time, what additional officers would be necessary?

Mr. WILEY. I have talked a great deal with the Secretary of Agriculture with regard to this act, and what would be the result if it should become a law. Of course, he is much interested in the protection of the agricultural interests, which this act would secure, the protection of the farmers, and also in honest dealings between the wholesaler and the retailer, and the trend of his idea is this—he being the administrative officer under the bill if it should become a law—that our work should be almost exclusively in cooperation with State officers. The Secretary of Agriculture has no intention of appointing an army of inspectors to scour the country, as has been indicated before this committee. His idea is to cooperate with the State officials when they are unable to reach the real offender; then he is to be called in by them in aid. And the number of additional officers required would be very much smaller than by the creation of a separate bureau altogether.

It is true, Mr. Chairman, we would have to have some additional chemists, because we have now all we can do under the present law, and to that extent there would be an increase in the employees of the

Department. But we hope to operate as far as possible through the States and in cooperation with State officials. That is the view of the Secretary of Agriculture.

Mr. MANN. Would you permit me to call your attention to what is probably the strongest objection to the Hepburn bill in the minds of the people who are dealers?

Mr. WILEY. Yes, sir.

Mr. MANN. Under the State laws, as for instance the State of Illinois—and many others are the same way—when the bill is passed there is no intention of appointing an additional lot of inspectors. The time comes when the politicians are extremely anxious to get jobs for certain men, and the experience is that those men who seek the positions are largely appointed, without much salary. Their pay depends on what they do, and they start out on a blackmailing expedition and become professional blackmailers. Nearly everybody prefers to pay something rather than to be put to the expense and publicity of a threatened suit or arrest for dealing in impure foods, although he may be perfectly innocent. What they are afraid of is that the politicians in Washington will succeed in getting the Secretary of Agriculture—maybe not this one, but maybe the next one—to appoint various men to these inspectorships simply to take care of the boys.

Mr. WILEY. I will admit, Mr. Chairman, the force of the objection: it is certainly well taken, and I know personally that much of what Mr. Mann has said is true in many cases. I would like to ask him if the same objections which he urges would not apply to the Corliss or Mann bills, which provide for the appointment of the same people exactly.

Mr. MANN. I will be very frank with you. I have never examined it carefully. I do not know; but I can say that there is not the same opportunity in the Corliss bill, because there you can not reach—the blackmailer can not reach the small dealer; he has got to go after the man who is able to take care of himself.

Mr. WILEY. I have examined both bills carefully. I see that there is no difference of administration in regard to the powers which would be conferred upon the Secretary of Agriculture in the one case and on the food commissioner in the other.

Mr. RICHARDSON. I should think your objection would apply to almost any service under the Government, for instance, the internal-revenue officers and the United States marshals.

Mr. MANN. But the difference, as I understand it, is this, and that is what I would like to have you make plain: The cases Mr. Richardson referred to are cases where men are paid salaries, but here a man may take an appointment without a salary—no salary is required. He solicits the appointment as inspector, and he is not required to be paid a salary. He makes his salary on the side; all he wants is the job.

Mr. WILEY. I think there is a general law—I know there is in Washington—that no one can work for the Government without a salary. There is a law forbidding anybody to offer his services voluntarily, or have them accepted voluntarily.

Mr. MANN. There are a great many persons filling positions without salaries.

Mr. WILEY. You mean official positions, bearing a commission?

Mr. MANN. Yes.

Mr. WILEY. I did not know that.

Mr. ADAMSON. I am willing for any reasonable regulations as to the District of Columbia and the Territories, for which we legislate, as the State legislatures legislate for the State, but I have seen so much of the evils and my people have seen so much of the evils of summoning witnesses and getting testimony and making cases under United States commissioners that it seems to me the administration part of this under such a bill would be worse than any impurity of the food. It is that feature of the case, added to the one suggested by Mr. Mann, that makes me up to this time irreconcilably opposed to any legislation in this line further than to create a bureau of information and instruction.

Mr. WILEY. I admit the force of that, and I submit that a Secretary of Agriculture might arise in the future who would submit and be a party to such acts; but I want to say that as long as you have a man like James Wilson as Secretary—a man of his broad intelligence and incorruptible honesty—no such condition could arise.

Mr. ADAMSON. That has nothing to do with the matter of which we speak. I am speaking of the abuse that grows out of an army of officials, deputy marshals, and so forth, who make their living by working up cases and getting mileage expenses, and so forth.

Mr. WILEY. Under the Hepburn bill no one can act unless appointed by the Secretary of Agriculture.

Mr. ADAMSON. They can get up testimony and swear witnesses and get paid—

Mr. WILEY. Not under the Hepburn bill.

Mr. DAVIS (reading). "The food commissioner is hereby authorized to employ such other chemists, inspectors," etc. You think under that as many abuses can take place as under the Hepburn bill?

Mr. WILEY. Exactly. I say that Mr. Mann's argument is a good one, but it applies to one bill as well as the other.

Mr. RICHARDSON. Do you not think the directing power and all that matter under our form of government is generally controlled by one or two parties, and that will rectify itself?

Mr. WILEY. I think that the evils that have been suggested are great—

Mr. DAVIS. It corrects itself in the change of parties under the republican form of government.

Mr. WILEY. But would those evils justify us in repealing our internal-revenue laws?

Mr. ADAMSON. I have seen a blacklist made out of the names of parties who were engaged professionally in making cases for the sake of the fees, and that testimony would not be accepted; but the result was that a new set of fellows sprang up and made cases in the same way, and this legislation multiplies that sort of business.

Mr. MANN. Would it be practicable to provide that a law should not be enforced against a particular man unless directed to be so by the Department here?

Mr. WILEY. The proposed law does provide that. You can not bring any action against any man except by the authority of the Secretary of Agriculture.

Mr. MANN. The Secretary of Agriculture may give a general instruction.

Mr. WILEY. No; it is special; it has to be done in every particular case. The Secretary of Agriculture has to certify to the district attorney

ney that the law has been violated in his opinion before any action can be commenced. It seems to me that the Hepburn bill safeguards the interests of all.

Mr. MANN. This is not a limitation, Doctor. This provision is not a limitation, as I understand it from reading it. I may be wrong about that. This is a direction to the Secretary of Agriculture to certify to the district attorney; but here is a penal statute which the district attorney or the inspectors can make use of. There is no limitation upon that.

Mr. WILEY. That is, they can act independent of the Secretary of Agriculture?

Mr. MANN. Certainly; I should think so.

Mr. WILEY. I am not enough of a lawyer to decide that. It seems to me no action can be brought here except by the Secretary.

Mr. MANN. Your idea is that no prosecution shall be had except upon inspection and direction from the Department here?

Mr. WILEY. That is undoubtedly so; that is not only my idea of the law, but I think the opinion of every man who has had any hand in making it. This bill is especially intended to avoid those petty little prosecutions which are brought for personal or commercial purposes very often, as I know to be the case.

Mr. MANN. You have quite a different opinion from my own opinion in that matter.

Mr. WILEY. And I do not think anybody could bring suit under this bill except the Secretary of Agriculture—not anybody.

Mr. COOMBS. There is this trouble. You take all departments, whether under the Post-Office or the Internal Revenue or what, and they rely upon their agents, their special agents; they rely upon their reports, and it seems to be against the practice of the departments to ever go back on a report of their agent in any manner, even though they are convinced that their agent is wrong. That system seems to have grown up and hedged about the authority of the heads of the different departments of Government. A postal inspector will go out into a district and report against the postmaster, and although upon investigation of the case the Department might be convinced that the inspector is wrong, it does not make any difference; you can not get a hearing. They have an arbitrary fixed rule, and the postmaster simply has to go.

Mr. WILEY. Will you let me call your attention to something else that is in the bill itself, viz., that no action be brought under this bill until the examination of the chemist has shown that the law has been violated. It is not an opinion; he finds by an examination any material that has been sold or offered for sale contrary to provisions of law. That is not an opinion; it is a fact which can be brought into court and proved, and no action can be commenced on suspicion.

Mr. COOMBS. That might be an answer to the suggestion I have made.

Mr. MANN. In reference to the inspector, I am not sure but that in previous hearings it has been stated that the design was to employ State inspectors without much salary, but if the design is to employ inspectors and pay them a salary, is there any objection to so limiting the bill that the number of inspectors employed shall be determined by the appropriation bill or subsequently fixed by act of Congress?

Mr. WILEY. I think that would be very desirable—very desirable that the number should be limited by law.

Mr. MANN. The bill as it is gives anybody who may have a political pull with any Secretary of Agriculture the opportunity to insist that a man shall be appointed as a food inspector without any limitation whatever.

Mr. WILEY. He could not be appointed with a salary, though, without the consent of Congress.

Mr. MANN. No; but as I say, they do not want a salary.

The CHAIRMAN. Is there any limitation upon these people who are now engaged in the inspection of meats; is there any limitation upon their number?

Mr. WILEY. Only the extent of the appropriation, Mr. Chairman; that is all.

The CHAIRMAN. The appropriation is made upon the estimate based upon the number that the Secretary has employed?

Mr. WILEY. Yes.

The CHAIRMAN. So, after all, the Secretary is untrammeled by limitation as to the number he shall appoint?

Mr. WILEY. I believe he is.

The CHAIRMAN. And is it so with any other cases?

Mr. WILEY. I think there are many other cases where the head of the Department is not only limited by the amount of the appropriation at his disposal but the number of employees. I believe that there are many other cases. I know of several instances of that kind in my own work. For instance, we have a lumped sum for certain investigations, under which the Secretary of Agriculture is authorized to employ as many assistants as he wishes to, within the limits given by Congress, and he does so; he employs people, sometimes for a short time and sometimes for a longer time, specialists and others.

Mr. RICHARDSON. I wanted to ask you something about section 3 in the Corliss bill. You understand that the punishment or penalty prescribed in the Corliss bill is simply confiscation?

Mr. WILEY. Yes.

Mr. RICHARDSON. Now, what do you think of that as a preventive, that remedy that is suggested there—just simply to confiscate the man's goods and libel it, and that is the end of it?

Mr. WILEY. Of course, I can not discuss that from the legal point of view at all, but I believe it is held in our law that you can not confiscate anything which has not been examined and condemned. And as the package sometimes might be a very small one, its confiscation would not be a hardship. For instance, suppose under the Corliss bill you should condemn a can of preserved food as being unwholesome, as is often so, it often happens that air gets in and ptomaines are formed, and those goods become unwholesome. Now, would it be legal or just to condemn every other can that has that label on it, because one can was found to be unwholesome?

Of course, that would be unjust. It seems to me that condemnation could apply only to the particular package that was examined, and as we have to pay for that anyway before we examine it, I do not see where the injury comes in. No one can go into a store and take a man's goods without paying him for them, and hence if you go and buy a man's goods and pay him the money for them, and you find

they are adulterated, and confiscate them, you do not do him any harm at all. He has already received the price of the condemned goods.

Mr. MANN. If you reach the manufacturer you harm him, would you not?

Mr. WILEY. No; unless you examined every package he has I do not think the law would allow you to condemn his goods; that is, you could not condemn a package before examining it.

Mr. COOMBS. How can you condemn a package without examining it?

Mr. WILEY. I do not think you can. The Hepburn bill provides safeguards for the dealer. It says when the sample is taken for examination it shall be divided into three parts, and one part go to the dealer, one to the district attorney, and one to the Department of Agriculture; and hence if he thinks he is being treated unfairly, if he thinks he can rightly contend his goods are wholesome, he has recourse. He has that one-third part of the goods which are taken.

Mr. ADAMSON. I have read the third section of the Hepburn bill. You do not think under that the district attorney could proceed except on the instruction of the Secretary of Agriculture?

Mr. WILEY. Absolutely not.

Mr. ADAMSON. Under section 3 all those matters would be brought to the Secretary of Agriculture, and prosecutions instituted in the manner I have indicated, or they will not be instituted at all. They will be done by the people interested in making fees.

Mr. WILEY. I should hate to think I would ever be associated with a Department that would stoop to such a practice.

Mr. ADAMSON. I do not think the Department intends to do it, but we are confronted by that sort of business.

Mr. MANN. We know that from the Department of Justice.

Mr. ADAMSON. And in the Department of Justice. Every affidavit is sworn out before a United States commissioner and it is certified up to the district attorney, and he examines it and has it before a grand jury.

Mr. RICHARDSON. Is not the remedy in doing away with the fee system?

Mr. WILEY. There is no fee system in the Hepburn bill.

Mr. RICHARDSON. As I understand it, there are no fees attaching to the Hepburn bill.

Mr. WILEY. Absolutely none.

Mr. RICHARDSON. That is the gist of the whole thing.

Mr. WILEY. I do not see how a man through self-interest could bring an action under the Hepburn bill. He would never get a cent out of it, and there would be no object in bringing an action unless it was to persecute some rival in business, and I am sure that no Government officer would ever consent to be a party to it.

Mr. ADAMSON. Would this not be inquisitorial—

Mr. WILEY. I want to say that if there is anything like that in the Hepburn bill no one who has had anything to do in framing it could find it, because we have been very careful not to interfere with legitimate trade or put any burdens on tradesmen, or give any opportunity for fraud, or for persecution on account of petty jealousy.

Mr. ADAMSON. What do you think would be the effect on trade if, in addition to making your bureau a department of information and education on these subjects, you would enable all people who manufacture to submit to you their formulæ and take their certificate as to correctness?

Mr. WILEY. I should hate to see any certificate issued by the Secretary of Agriculture used in trade as an advertisement, because whenever a Secretary of Agriculture issued a certificate to a manufacturer that manufacturer would publish it, and that is taking advantage of that against his competitor.

Mr. COOMBS. Why should not that be legitimate? He is advertising on the basis of truth and nothing more. Why is not that right; why should he not be entitled to that advantage if he does conform to the law?

Mr. ADAMSON. I do not see how you are going to avoid being conspicuous under any of these bills.

The CHAIRMAN. If you do that, what is your objection to the inspector? You object to him because there might be a corrupt man appointed, or a corrupt chemist. It seems to me that in attempting to avoid one difficulty you are jumping into one of infinitely greater consequence.

Mr. ADAMSON. If you are going to have that sort of a man in office it looks like he would be equally dangerous under each of these bills.

The CHAIRMAN. Certainly; but you presupposed that kind of man was going to be in office.

Mr. ADAMSON. Mr. Mann suggested that might be so; and there is lots of human nature left in the world.

Mr. WILEY. Under the Hepburn bill we certify to nothing except what is adulterated. So they would hardly use that certificate as an advertisement in trade.

Mr. ADAMSON. If you invited all manufacturers to submit to you their formulas, and take those statements, would it not reach the point that the people would look out for your certificate on articles for sale, and that would be a badge of honor to their trade and reputation?

Mr. WILEY. Yes; and then the manufacturer who wanted to would use that certificate and put out other goods on the market that did not correspond to it at all.

Mr. ADAMSON. Then somebody else can find rascals in the world besides Mr. Mann and myself.

Mr. WILEY. The Secretary of Agriculture or food commissioner would be compelled to do what the Corliss bill wants him to do, and that is to be a party to the greatest scheme of adulteration that has ever been devised. He would do that when he would issue a certificate that that food can be sold over the country; he would thus become a party to the greatest fraud that can be imagined. I want to illustrate that because it is the weakest point of the bill. They can submit that formula, and, if approved, all goods in harmony with that formula are exempt from the provisions of this act. They can submit a formula for a sirup composed of one part of maple sirup and four parts of glucose, and the food commissioner approves it, and they sell that as maple sirup everywhere, and are immune under the law.

Mr. ADAMSON. Then let the State wherein he does that take hold of him and send him to jail.

Mr. WILEY. They can not reach the manufacturer outside, and a man ought not to be sent to jail for obeying an act of Congress.

Mr. ADAMSON. He may come there—

Mr. WILEY. The State may have no law—

Mr. ADAMSON. You do not recognize the venue in Federal as well

as State courts. You have to go where the crime is committed and catch the fellow and punish him there.

The CHAIRMAN. You should remember that it is most difficult to convict a man, and not one in ten is convicted, and you are going to make it still more difficult by covering him with the authority of the United States—giving him the certificate from the Department of Agriculture.

Mr. ADAMSON. It takes evidence to convict anybody, and you have to locate the venue to try him—

Mr. WILEY. But you see what advantage a man would have. He has a certificate deposited with the Secretary of Agriculture, and he would say these goods are approved.

Mr. ADAMSON. Provided he sells the goods that are approved.

Mr. WILEY. He does, but he sells them under any name he chooses. The Corliss bill does not provide for a label or name, but simply for the formula. . The goods may be made in accordance with the formula; the formula does not say under what name they shall be sold. They can be sold under any name. This committee passed a very wholesome part of the Hepburn bill the other day; that is, to prevent the misbranding of foods as respects the States where goods are made. That is, a man can not put "Vermont maple sirup" on sirup not made in Vermont, but he could put "maple sirup" on it because that is no violation of the statute.

Now, I want to say this, Mr. Chairman, that the arguments which have been presented here for the Corliss bill have not explained the provisions of the bill. I do not think that a single provision of the Corliss bill has ever been explained in this committee by any advocate of that bill. Their whole argument has been directed against the State laws. This committee is asked to help nullify State laws. Now, there are some gentlemen here—and I sympathize with them—who think the States should be left to manage their own affairs. I believe in that doctrine. The Hepburn bill contains a provision which says specifically that nothing in this act shall be so construed as to interfere in any way with the administration of the police laws of the States, and yet you are asking this committee to undertake a work for the express purpose—I want to say this advisedly—of using an argument with the States to get them to repeal the laws of which these people complain. That is their purpose in advocating the Corliss bill.

These gentlemen do not care particularly for the public health. They have said that they put nothing in their goods that is injurious to health. They have come here and argued for a bill which does not touch anybody, because they say manufacturers do not put anything injurious into their foods. They come here and plead for a law to protect the public against these foods which they say do not exist. Is not that rather a diaphanous argument? The bill is unnecessary, according to their arguments, and they practically attempt to get a bill passed in this Congress which they can hold up to every State legislature and force the State legislatures to repeal the laws that are in force in those States; and thus you are asked to do the very thing you do not want to do, and that is, to interfere with State legislation, and that is the object of the Corliss bill.

This bill has not been presented by any board of health. No physician has come here and argued for the Corliss bill. And when it comes to ascertaining its authors, as Mr. Mann says, the members of the

National Retailers' Association are the men who have presented it. The constitution of that body requires that every member shall pay a fee of 10 cents, and at their meeting recently held in Detroit less than \$600 was reported collected. So this association represents less than 6,000 members. And I doubt if there is a grocer in Washington who would advocate the Corliss bill. I believe a great majority of the District of Columbia grocers are in favor of the Hepburn bill.

We had Mr. Kaiser here, the head of the Pennsylvania retail grocers, who presented his statement of the case; and where have you any record of any meetings except this one in favor of supplanting this bill—the Hepburn bill—which has been approved for fifteen years by every kind of industry in this country, especially the farmers, who have been lost sight of in this shuffle, as in many other shuffles throughout the country? Here we have a great manufacturing trust—they acknowledge that they are a trust—for the manufacture and disposition of food products, and you are asked to relieve them of all responsibility of fraudulently adulterating foods, and let the poor farmer suffer.

There are 76,000,000 people in this country, and less than 6,000 are represented here opposing this bill, and I think almost every man who is not here is in favor of it.

Now, we have some rights; the farmer has some rights, or he ought to have at least. He is the basis of our wealth, and he is brought into competition with these products. You have protected him in the matter of butter. You will not let oleomargarine be sold as butter. It was said that the price regulated this, but we know that oleomargarine is sold as butter and at butter prices, and we have evidence to show that other oils are sold as olive oil in this country and at olive-oil prices. It is not always the cheap article that is adulterated, but the dear article is apt to be adulterated also, and these great agricultural interests—

Mr. RICHARDSON. The oleomargarine matter was all dependent upon the question of color. In our section of country it is a great commodity—the cotton-seed oil and the hog fat and the beef fat that enters into oleomargarine.

Mr. WILEY. Yes; and I am a believer in oleomargarine when sold as such.

Mr. RICHARDSON. We were all in favor of not letting oleomargarine be sold as butter. We did not want fraud or misrepresentation, but we wanted to have the privilege of marking it oleomargarine and coloring it at the same time like butter.

Mr. WILEY. That is what I said awhile ago. I do not believe anybody has the right to prescribe what any man should eat or how he colors it, if no deception be practiced.

Mr. RICHARDSON. I wanted you to understand our position.

Mr. WILEY. I stand with you on that, and I have lost caste among my friends of the dairy-cow persuasion because of my stand.

Mr. RICHARDSON. When you mark it oleomargarine, it does not make any difference if you color it with something that is harmless and wholesome; it is not a fraud, because a man knows he is buying oleomargarine.

Mr. WILEY. The man that sells oleomargarine as butter is punished under the Hepburn Act, and ought to be, and the man who wants to buy oleomargarine can buy oleomargarine. I know I am not in har-

mony with a majority of this Congress on this point, but I believe that a man who wants to buy oleomargarine as such ought not to be compelled to pay a tax on it, because it is a wholesome food product, and colored to suit his eye, and that is the reason I am in favor of the Hepburn bill.

Mr. ADAMSON. I hope you will not analogize too strongly this legislation to the oleomargarine legislation, because I am trying to get with you on this.

Mr. WILEY. And I hope you will.

Mr. RICHARDSON. I am glad to have your views on oleomargarine.

Mr. WILEY. I want to tell you briefly why I favor the Hepburn bill. In the first place, it is a broad, honest measure which is not aimed at anybody. It is not aimed at any manufacturer; it is not aimed at any product. It treats them all exactly alike. I, unfortunately, perhaps, have been born and brought up to love justice and equality before the law, and I have never been in favor of any legislation that would strike at one food product and not at another, or at one industry and not at another.

The Hepburn bill is based on that absolute principle of justice and equality. It is, I believe, almost absolutely free of any provisions which will annoy, restrict, or prohibit commerce in anything that anybody under heaven wants to eat or drink, and I believe it is the inalienable right of every human being to eat what he likes, to eat it as he likes, and color it as he pleases, and to drink what he wants, to drink without any let or hindrance from any human being, provided he does not offend his neighbors or the laws.

The Hepburn bill comes up to that requirement. It does not prohibit anything; it makes everything come under its own name and for what it is, so that every citizen of this country can go into a grocery store and purchase exactly what he asks for, and that is what ought to be done.

Coming up here this morning I had these bottles with me in the street car and the conductor said: "You have got some of that stuff." pointing to the bottles. "Yes," said I. "It is getting so now," said he, "that a poor man can not get anything good to eat in this town."

Mr. ADAMSON. You are very sanguine, in my judgment, if you expect Congressional legislation to bring about the millenium.

Mr. WILEY. No, I do not think it will, and I hope it won't. I do not want to live in heaven yet; I want to stay on earth. But I do think legislation of this kind will secure the rights of everybody without interfering with the rights of anybody, and that is the legislation I am for all the time. I believe if, in your wisdom, you will report this bill favorably and secure favorable action on it you will have done a service to agriculture, to manufacturing, and to consumption superior to that of any measure which you have considered and legislated upon in years.

I want to tell you that the people of this country are behind this measure; they are behind this principle. I do not care much for its details, provided you do not come off of that broad foundation which I have mentioned. I do not care where you put the administration of this law. You may make a separate commissioner, absolutely apart from the Department of Agriculture; I am for the bill, just the same. I do not care; I am for any bill regulating pure food which this committee shall bring out, whether it is the Hepburn bill, or part of it, or

none of it, so that it is based on the measures of justice and equality which I have stated, and I will support that bill. And I believe every member of the Pure Food Convention, and every man who has advocated pure-food legislation on the floor of the House, will advocate such a bill.

Can those who are here as advocates of the Corliss bill say as much? Are not they here to oppose the Hepburn bill because it will tend to interfere with commerce in adulterated foods? They will not support it, and in order to beat it they bring forward this subterfuge—if I may use that word without reflection upon these gentlemen. I know that they are capable men and are here honestly to prevent this legislation. They are absolutely honest in their expressions. They believe they have the right to impose upon the public; they believe the public demands an imposition. Both of these postulates have been presented to the committee. First, they have the right to impose upon the public, and, second, the public itself wants to be imposed upon. I will admit, perhaps, the last one, because Barnum found it out years ago, and the most preposterous scheme in finance—that is, the one that has the least measure of merit to it—will get the most subscriptions to its stock.

It is a part of our nature which is perhaps overdeveloped. But that anybody has the right to do this I certainly do not admit. We want simply no restrictions, no impositions, but simply to have this measure stand upon its merits, that everything which is offered in the shape of foods shall be true to its name. And if you had taken the Sherman bill, which passed this committee, and had added simply one phrase to it you would have covered all the argument I claim. If you had said, "Misbranding as to the State or Territory in which they are made, or as to the constituents of which they are composed," you would have covered the whole of my argument.

I believe a man has the right to eat copper in his peas or beans if he wants to.

I have a sample here containing a lot of copper as coloring matter. Are you going to prohibit me by a law from eating that? I hope not. I admit it is deleterious to the health of some people. It might be extremely deleterious to an infant or an invalid, but it does not hurt me, and all I want Congress to say is that that shall be marked "colored with copper."

Mr. RICHARDSON. Give some option?

Mr. WILEY. Yes; do not make a man a mere automaton; let him exercise his judgment.

Mr. RICHARDSON. Is not that running to paternalism?

Mr. WILEY. Yes. I think they might as well say that a man shall not drink any whisky or wine—and they do say that in some States, but I am glad I do not live there. When I want to eat French pease I want to eat them. I know they contain copper.

Are you going to be compelled to eat yellow pease all your lives because Congress says you shall not put copper in pease? And the same is true with every other article of food and drink.

That is what the Hepburn bill proposes to do—simply to inform the consumer what he is getting. Now, can there be any reasonable objection to a measure like that which we have proposed here? It seems to me in this we are presenting only reason, only common sense,

and that we are not going off into any restrictive or prohibitive measures of any kind.

Now, Mr. Chairman, I have said all I expected to say, and it must be nearly your time for adjournment.

Mr. COOMBS. You have some coffee there?

Mr. WILEY. Yes, I wanted to say something about coffee, and if given a minute more I will say it.

I have a letter here from a broker which I would like to present, and it will take but a few moments to present it. I will not read it all. This is about selling coffee under a false name. We sell in this country immense quantities of coffees under the names of Mocha and Java. A year ago an interview appeared in the newspaper in which this fact was noted and attributed to me. A broker wrote to the Secretary of Agriculture and said that any man who did not have any more sense than to make such a statement as that ought not to be a Government official. That is what they always say when anything is said they do not like—they want the Government officer removed. So this broker wanted me put out because I said that Mocha and Java coffees sold here are not true to the name, and he wrote to the Secretary of Agriculture and said that a certain amount of Mocha and Java was imported, and the Secretary of Agriculture replied as follows:

NEW YORK, February 18, 1901.

The COMMISSIONER OF AGRICULTURE,
Washington, D. C.

DEAR SIR: I inclose herewith a clipping taken from the New York Sun of this date. I have read similar articles in the different papers, but as they were merely articles written for the papers, and no authority given, have taken no notice of them, although even they tend to injure a legitimate mercantile pursuit, in a staple which has almost become a necessity; but when a professor of chemistry connected with the Department, supposed to be informed as to products of this and other countries, makes such statement as this (if he does) it is certainly time to call a halt and ask your Department to find someone who is capable to look up such matters before making public such misleading statements. I can not for the life of me think what chemical test would prove as to what country a coffee comes from nor to what importer he must have received his samples from. The fact is there are 100,000 pounds of Java coffee received here, as well as other East India coffee. As for Mocha there are also 100,000 pounds direct from Aden, Arabia, and the laws of that country prohibit the importation into Arabia of any coffee, so that all shipments from there must certainly be actual productions of the country. We receive large quantities of desirable coffee from Mexico, Venezuela, Ecuador, United States of Colombia, and all the Central American Republics.

He is right in one particular, that the largest part of our supplies come from Brazil, as that is the largest coffee producer, and in the South and West the demand, excepting in the large cities, is for Brazil coffee, viz, Rio and Santos, because it is the cheapest coffee grown. The consumer is really the cause of so much adulteration by buying cheap goods, and forcing the retailer to buy such goods to meet the demand, and then again Java coffee and Mocha coffee are names grown on the public as being the best, whereas Central America and United States of Colombia and even Jamaica grow a much finer grade. As for Porto Rico, the supply is very small, and Hawaii is not known here as a producer except for home consumption, excepting possibly very small shipments which do not get away from San Francisco market. Trusting you will have the professor be a little more thorough in his researches, or else confine his tests to adulterations only instead of countries of growth, you will benefit a large commercial interest as well as,

Yours, truly,

W. H. BACON.

The article referred to is as follows:

Incessant complaints of adulterated coffee daily pouring into the office of Prof Harvey Wiley, Chemist of the Department of Agriculture, have led him to make a thorough test of many samples of coffee sent to him, as well as obtaining through his

own agencies samples from importers and dealers in general. The result is that Professor Wiley finds that while we practically get no Java and Mocha coffee, we get a berry of excellent quality from Mexico, Porto Rico, and Hawaii, but only in small amounts, the larger part of our supply coming from Brazil. To put the coffee drinker's mind at rest, this great chemist and food expert says:

"What we Americans need is, not to know how to drink coffee, but to learn how to make coffee." In cases of adults there is nothing to indicate that it is injurious when used in moderation, and he specifies the use of a cup, half hot milk and half coffee, as a breakfast beverage, while none should be taken at noon, and but a small cup of black coffee after dinner. This, Professor Wiley declares, will not hurt the average mortal if used a full lifetime, though there are many cases of dyspepsia and other forms of invalidism upon which coffee acts as a poison.

The Secretary of Agriculture sent the following reply to Mr. Bacon:

FEBRUARY 28, 1901.

Mr. W. H. BACON,
98 Water Street, New York.

DEAR SIR: I have considered carefully your letter of the 18th instant, relating to a statement made in the New York Sun attributed to Dr. H. W. Wiley, the Chemist of this Department, to the effect that the principal part of the coffee sold in this country as Java and Mocha was really not these brands at all, but other brands sold under these names.

Your own letter shows that this statement must be practically true. All over the United States hundreds and hundreds of dealers are selling coffee as Java and Mocha, so that the quantity sold under these names is a very large percentage of all the coffee sold.

There is no contention that a chemical test will distinguish a Java or Mocha coffee from one grown in Brazil. The shape and size of the bean and the general appearance will lead experts in such matters to distinguish, possibly, between such coffees.

You state that 100,000 pounds of Java coffee are received at the port of New York, and also 100,000 pounds of Mocha, making in all 200,000 pounds. I need not call your attention to the fact, as you already know it, that the amount of Java and Mocha coffee sold in the United States by retail dealers is many times greater than the amounts which you mention.

To sell an article under a false name has always been regarded as an adulteration in the legal sense. It is a direct fraud upon the consumer in using the name of an article which has an established reputation to sell one which has not, and you yourself confess in your letter that such is the object of using these names in the trade.

Denying, as you do, that adulteration exists, you say in your letter: "The consumer is really the cause of so much adulteration, buying cheap goods, and forcing the retailer to buy such goods to meet the demand, and then again Java coffee and Mocha coffee are names grown on the public as being the best, whereas Central America and United States of Colombia and even Jamaica grow a much finer grade."

You thus, in your own statement, fully corroborate that attributed to the Chemist of the Department in the newspaper article referred to.

I have shown the newspaper clipping to Dr. Wiley, and he states that the interview is essentially correct. He says the phrase "we practically get no Java and Mocha coffee" should be construed to mean that the quantity of Java and Mocha coffee imported into this country, compared with the total importation, is very small; and this appears to be the truth from the statement that you make. Dr. Wiley states that he sees nothing in the interview which is contrary to the facts as he has ascertained them from the table of imports prepared by the Treasury, and in conversation with coffee brokers in New York.

It seems to me that the dealers in coffee should make an earnest effort to try to get the consumers "to be honest." According to your statement, the whole difficulty lies in the dishonesty of the consumers, who compel the dealers to cheat them by the demands which they make.

Respectfully,

JAMES WILSON, Secretary.

One would have thought that this reply of the Secretary would have satisfied Mr. Bacon, but he continued the correspondence, as follows:

MARCH 4, 1901.

The COMMISSIONER OF AGRICULTURE.

DEAR SIR: Yours received and noted, and I, apparently, in using figures to express my thoughts, was not plain enough. I meant hundreds of thousands of pounds of both Java and Mocha, whereas I might have said millions. However, I can not agree that Professor Wiley was correct, and as you have figures of export and import he must

know that the coffee imported was not again exported, consequently went into consumption, and therefore his statement that "there was practically no Java or Mocha sold here" was not correct. I did not write to engage in a controversy, but in hopes that a public statement might come from your Department which would not bear so heavy on a large branch of importers. I agree with you, coffee mixed and sold as Java is an adulteration, but that would not show that it was not received here, whereas the clipping I sent you would imply that it was practically impossible to get either Java or Mocha in this country. Trusting you will again look into the matter, I am,

Yours, etc.,

W. H. BACON.

The Secretary did "look into the matter," and furnished Mr. Bacon with the following official figures of importation:

MARCH 8, 1901.

Mr. W. H. BACON,
98 Water Street, New York.

DEAR SIR: The Secretary of Agriculture has referred to me your letter of the 4th instant, with the request that I reply thereto.

It is hardly necessary to do more in this case than to cite the official figures. The total import of coffee into the United States for the year ending December 31, 1898, was 804,283,935 pounds; for the year ending December 31, 1899, 878,198,029 pounds; for the year ending December 31, 1900, 785,918,534 pounds.

If we regard the whole of the coffee imported from the East Indies as Java and all the coffee imported from Asia as Mocha, we find that in 1900 the total quantity of coffee imported from the East Indies was 22,224,166 pounds, and the total from Asia and Oceania 3,562,864 pounds, making a total of 25,787,030 pounds. In addition to this quantity there were imported from the Netherlands 1,967,483 pounds which, presumably, may be regarded as Java coffee. Add this sum to that mentioned above and we have 27,754,513 pounds. This, you will admit, represents the maximum total of Java and Mocha coffee imported. In point of fact, the coffees imported from Arabia and from the island of Java are doubtless very much less in quantity than the totals given above.

The whole amount of coffee imported for 1900, as mentioned above, was 785,918,534 pounds. The percentage of coffee imported from the East Indies and from Asia is, therefore, 3.5. It is evident that if we should exclude from this all except the direct importation from Java and the circumscribed region of Asia which produces the Mocha, this number would be greatly reduced.

It therefore appears that the statement which was attributed to me and to which you made objection, viz, that practically no coffee of the true Java and Mocha type was imported into this country, is strictly correct.

The figures mentioned above are taken from official sources, viz, the Monthly Summary of Commerce and Finance of the United States for 1900, published by the Bureau of Statistics of the Treasury Department. The figures quoted are found on page 1490.

Of course there is no method of determining the quantities of coffee sold in the United States under the terms Mocha and Java, but there is no doubt that these amounts are enormously greater than the number representing the imports.

All trading in coffee under the terms Mocha and Java, if the coffee be not entitled to those names, you have already agreed with me, is fraudulent. It is this fraudulent practice which should be broken up, in the interest of honesty and justice to the consumer.

You will understand that I am not responsible for all the newspaper statements attributed to me, as correspondents often exaggerate statements which they see or which are made to them. To be within the certain limits of truth, I would say that not over 3 per cent of the coffee imported into the United States comes from Java and Arabia, and this statement is thoroughly established by the official figures to which I have referred you.

I have the honor to be, very respectfully,

H. W. WILEY, *Chemist.*

And yet you can go into any grocery store here, I believe, and buy Mocha or Java, and not one grain of it has ever seen Asia or the East Indies.

Mr. MANN. When you say the East Indies, what do you include?

Mr. WILEY. The region around Java, the Dutch East Indies especially. The amount from all that region and all Asia is only 3½ per cent.

Mr. TOMPKINS. And they are the only regions from which Java and Mocha coffee come?

Mr. WILEY. Yes; and yet the people of this country honestly believe that they are getting those berries, and they are paying 40 cents a pound for Brazilian berries when the highest price for those berries at wholesale to-day is only from 9 to 12 cents a pound.

Mr. TOMPKINS. And they retail at 40?

Mr. WILEY. They retail at 40 cents after roasting, because people think they are getting Java or Mocha.

Mr. ADAMSON. Can you give us the names of the brands they really give us for Mocha and Java, so we can order them?

Mr. WILEY. Yes; I have them right here.

Mr. ADAMSON. Please give me the names of those two.

(Mr. Wiley exhibited samples of different coffees to the members of the committee.)

Mr. WILEY. Now, here is a real Java coffee.

Mr. RICHARDSON. You can get that in this country?

Mr. WILEY. Yes; by special order to the importer or broker.

Mr. ADAMSON. I want to know what to call for to get the two things that they really give us.

Mr. WILEY. Here is the Brazilian coffee, which is sold as Java.

Mr. RICHARDSON. Is this as good as Java?

Mr. WILEY. I think practically it is just as good. But what is the use of paying 40 cents a pound for it? That is what we are protesting against. Let them sell it as a Brazilian coffee and get the price that Brazilian coffee should sell for. What is the use of the people of this country paying hundreds of millions of dollars a year for fraud.

Mr. COOMBS. That is real Mocha [indicating sample]?

Mr. WILEY. Yes. Here is the coffee that is most often sold as Mocha. It resembles it in the size of the berry. This is Brazilian coffee, which sells wholesale for 9 cents a pound.

Mr. COOMBS. It looks better.

Mr. WILEY. It is undoubtedly just as good, but it is not nearly as high priced.

Mr. ADAMSON. Show me what is sold for Mocha, if you please.

Mr. WILEY. Here it is. They simply imitate the shape of the grain. In fact, they do not go to that trouble. You can go to many stores to-day and get Java and Mocha coffee, and they do not care where it comes from, nor do they regard its shape, because people do not know the shape of the coffee berries. I do not believe there are a hundred people in Washington who ever bought any Java coffee; that is, who bought it and knew it was Java. We have absolutely false coffee berries here, not roasted, which we picked out of coffees we examined.

Mr. COOMBS. This is the green berry?

Mr. WILEY. Yes.

Mr. COOMBS. And when it is parched you say it sells for 40 cents a pound?

Mr. WILEY. Yes. We do not find this spurious coffee on the market now—this coffee made of wheat and molasses and other substances—but when coffee goes up in price you will find plenty of these berries, unroasted or roasted.

Mr. RYAN. What do they consist of?

Mr. WILEY. Cereals and other substances molded in the shape of the coffee berry.

ADDITIONAL STATEMENT OF MR. H. W. WILEY.

I have listened for a week to the gentlemen who have appeared before your committee in advocacy of House bills 9352 and 12348 and in opposition to House bill 3109. I ask your indulgence, perhaps at some length, to summarize what has been said and to answer such arguments as seem to be faulty or incomplete. I realize that human ingenuity can not frame any measure as important as that relating to pure food, its adulterations and sophistications, which will be perfect in all of its details or even principles; and therefore I think it may be said without fear of contradiction that not a single one of the measures which you have been called upon to consider is free of mistakes or imperfections. I am glad that you have decided to go into this matter in detail, to study carefully the propositions which have been submitted, and I have confidence in the wisdom of this committee to bring forward for the consideration of the House of Representatives a measure which is broad, just, and practical.

It is evident, in the first place, that you have before you two perfectly definite propositions, whatever may be the imperfection of the language in which they are couched. The first of these is contained in the Hepburn bill (3109), and broadly stated it is as follows: The prevention of adulteration, misbranding, or poisoning of food products, of the adulteration, debasement, or misbranding of drugs, and the regulation of interstate commerce therein. The second proposition is contained in the Mann-Corliss bill, and is as follows: To prevent the transportation of poisoned foods or foods containing any substance deleterious to health. Two classes of witnesses have appeared before you—one class in favor of both of these propositions, namely, the advocates of the Hepburn bill, and the second class in favor of the latter proposition only and opposed to the Hepburn bill.

The position of this second class of witnesses may be broadly stated as follows: The Congress of the United States should not interfere with interstate commerce in adulterated foods, provided they contain no ingredient injurious to the public health. Nearly all the time of the last week has been given to the arguments in support of this proposition. Before proceeding to examine these arguments in detail it will be well to give a brief analysis of them.

First. All of the gentlemen speaking in favor of the Mann-Corliss bill represent manufacturers, distributers, or retail dealers in food products.

Second. No person representing the agricultural community, namely, the producers of foods, nor the consumers of foods, has spoken in favor of this measure.

Third. It is quite certain that a very large percentage of the makers, distributers, and retailers of food products are opposed to the Mann-Corliss bill, and their position is stated in the admirable argument of Mr. Kiser, president of the Pennsylvania Retail Grocers' Association, by Mr. Morrison, of the American Baking Powder Company, and by the statement filed by Mr. Gallus Thoman, secretary of the National Brewers' Association of the United States.

Fourth. The position taken by the advocates of the Mann-Corliss bill is not supported in any particular by the testimony given under oath before the Senate Committee of Manufactures of the Fifty-sixth

Congress, of which Senator Mason was chairman, and which was published as Senate Report No. 516, Fifty-sixth Congress. Of the 197 witnesses examined by that committee under oath not a single one took the position that a food law should be confined to substances deleterious to health.

Fifth. The arguments advanced by the advocates of the Mann-Corliss bill belong to the following categories:

(a) State laws similar in purpose to the Hepburn bill destroy trade, because the prejudices of the public do not permit them to buy articles correctly labeled.

(b) The State laws punish innocent parties.

(c) The commissioners of the various States make oppressive, unjust, and onerous rulings.

(d) The States will doubtless follow the lead of national legislation and make laws in harmony with the national law; therefore, if the Hepburn bill becomes a law all the States will eventually pass laws in harmony therewith. Conversely, if the Mann-Corliss bill becomes a law the present oppressive State laws will be repealed, and new laws, which will not restrict the adulteration, misbranding, and debasement of food products, provided they contain no deleterious substance, will be passed. Thus the whole country will be "wide open" to every form of adulteration, misbranding, and debasement, and thus the profits of the retail grocers will be increased.

(e) If the Hepburn bill becomes a law stocks of adulterated goods on hand will be unsaleable, and thus the retailers will suffer a great loss.

(f) If the Hepburn bill becomes a law all foods will have to be correctly labeled, and the public will refuse to buy foods which contain glucose, cotton oil, and other common sources of adulteration against which the people have a prejudice.

(g) Retail grocers sell staple articles whose composition is well known to the public, such as sugar, at cost or below, and in order to make profits it is necessary to handle a stock of goods whose composition is believed by the purchaser to be something which it is not.

Sixth. The arguments advanced by the advocates of the Hepburn bill belong to the following categories:

(a) The consumer of food products is entitled to know the nature of the substances he purchases and to be assured that they are pure and wholesome.

(b) The producers, manufacturers, dealers, and consumers of food products have an equal right to protection by the law.

(c) They deny that the manufacturers and retailers have the right to defraud the producers on one hand and deceive the consumers on the other.

(d) They claim, in common with the advocates of the Mann-Corliss bill, that national pure-food legislation will have an influence on the several States and eventually bring the State laws into harmony with the national law, which is intended primarily to supplement and aid in the execution of the State laws.

(e) They claim that, by placing the execution of the law in the hands of the Secretary of Agriculture, and not in the hands of a commissioner, the petty annoyances and grievances complained of by the advocates of the Mann-Corliss bill will be entirely avoided.

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(e) They claim that, by placing the execution of the law in the hands of the Secretary of Agriculture, and not in the hands of a commissioner, the petty annoyances and grievances complained of by the advocates of the Mann-Corliss bill will be entirely avoided.

(f) They claim that honesty and morality in dealing in food products are quite as important as to secure freedom from deleterious substances.

(g) They claim that the provisions of the Hepburn bill, which propose to secure freedom from deleterious substances in foods, are far more efficient than the provisions intended for a similar purpose in the Mann-Corliss bill.

(h) They claim that the Mann-Corliss bill is brought into this committee not for the purpose of securing legislation on pure food, but for the express purpose of defeating the Hepburn bill.

(i) They claim that every advocate of the Hepburn bill will earnestly and faithfully labor to secure the passage of any bill regulating the adulteration of foods which this committee may report, and that on the other hand not a single advocate of the Mann-Corliss bill will support any bill reported by this committee which proposes in any way to control frauds in foods.

Having thus briefly stated the substance of the arguments to which this committee has listened, I propose now to take up for consideration the two proposed measures, to analyze the arguments which have been presented, and finally to state why, as one of the representatives of the agricultural interests of this country, it is my opinion that the Hepburn bill should be favorably reported by this committee.

In discussing the subject of food adulteration I am impressed with the fact that only those points should be presented which touch on the one hand the health of the consumer and on the other the statutes made and provided to regulate traffic in food adulterants. The existence of a harmless adulterant in the food may on the one hand offend the statute, but on the other would be no menace to health, while it is possible that a food may contain an injurious adulterant the use of which is not forbidden by any enactment. I need not call attention to the many laws which have been made by the several States and corporations in regard to food adulteration. I would, however, like to call your attention to the classification of these laws in respect of their nature.

First, it may be said that the ostensible purpose of all laws of this kind is restrictive. Everyone admits that the admixture of certain substances in foods may be practiced without detriment either to the purse or the health, and, therefore, the absolute prohibition of all adulteration would work hardship and injury to legitimate business. The following classification, I believe, will include all existing or proposed laws regulating food adulteration.

First, general laws: These include all laws which do not mention any article of food by name, but consist only of general principles applicable to all food products. A type of these laws is shown in the Hepburn bill, now pending before the National House of Representatives, and its counterpart, the Hansbrough bill, pending before the Senate of the United States. These two bills are identical in verbiage, and represent the results of many years of effort in securing national legislation. They have the full approval of three successive national pure-food congresses, and of large numbers of organized business associations, sanitary congresses, and scientific bodies throughout the United States.

Second, discriminating laws: This class of legislation refers to those acts which are made specifically for certain articles of food. For the most part these laws contain nothing whatever of an objectionable

nature, and the only cause of complaint in regard to them is that they discriminate between various food products. The spirit of fairness which has characterized and should continue to characterize legislation in this country, requires that all similar products be treated alike in legislation. For this purpose the enactment of a general law such as that mentioned above would cover all possible contingencies and place all food products on exactly the same footing. The discriminating laws relate almost exclusively to dairy products. Great numbers of municipalities and States in this country have such discriminating laws.

Third, prohibitive laws: Prohibitive laws are of two kinds: First, those which prohibit the manufacture and sale of food products which are wholesome and nutritious. Second, laws which prohibit the manufacture and sale of added deleterious substances. Aside from the fact that the latter class of laws is discriminating, there can be no objection to their enactment, provided the deleterious effect of the prohibited ingredients were established beyond any reasonable doubt. In point of fact, however, there have been very few attempts to determine by impartial and competent experts the character of many of the prohibited articles and their effect upon the human organism. Some of the articles most commonly prohibited are preservatives, such as salicylic acid and formaldehyde, and mineral substances, such as alum and lime. Interested parties may employ persons to prove or disprove the harmless or harmful character of these ingredients, and the results of their investigations usually coincide with the wishes of their employers, an event naturally to be expected. The Hepburn bill, above referred to, makes provision for the impartial study of all these subjects by a commission to be appointed jointly by the President of the United States and the Secretary of Agriculture.

Examples of the prohibitive laws of the first kind mentioned above are found in a few of the States, and relate mostly to the manufacture and sale of oleomargarine. The injustice of such a prohibitive law or laws is so patent as to need no further illustration, and the courts of last resort have usually pronounced such restrictions to legitimate trade unconstitutional.

Another striking instance of the operation of prohibitive legislation is shown in New York, where skim milk is not allowed to be sold, I am told. This unwise provision causes many people to use beer as a substitute for skim milk, although its food value is far inferior, and its alcoholic content can not be said to be advantageous to young children. Skim milk is a wholesome and nutritious food, and as such its sale and consumption should not be prohibited.

Fourth. The fourth class of legislation in regard to food adulteration may be designated as fiscal, because under the pretense of raising revenue it lays a tax on wholesome food products. I do not include among such laws the internal-revenue laws laying taxes on spirits and fermented beverages. These laws are what they pretend to be, viz, revenue producers. But the tax of 2 cents per pound which is placed on manufactured oleomargarine and the tax of 4 cents per barrel on mixed flour are examples of laws regulating food adulteration under the pretense of raising revenue. The authors of these laws do not deny that their purpose is restrictive and prohibitive and not fiscal.

In times of necessity I am sure I should not oppose the taxation of food products to raise revenue to meet great exigencies in the history

of our nation, but it is only pretense to see a paltry sum collected into the Treasury by taxes on perfectly wholesome food products. There is no one more bitterly opposed to fraud in foods than I am, and no one who would punish more severely all venders who sell to innocent customers oleomargarine as butter, or maize meal as wheat flour; but I never have been able to bring myself to the belief, however, that the correct way to prevent frauds of this kind is to tax the food products. On the other hand, I think such a tax is an inducement to fraud and creates and conserves that which it pretends to detect and destroy.

Thoroughly obnoxious to fair-minded men, it seems to me, is the taxing of the process of coloration in one article of food and allowing it to be practiced with another with impunity and with freedom from all restriction. Such enactments lack every element which appeals to the broad principles of justice and fair treatment.

Having thus summarized briefly the different classes of legislation which have been proposed for controlling the adulteration of foods, it is proper to add a classification of the different methods of adulteration practiced. Preliminary to this I may say that chemistry is the science which has chiefly to do with adulterants of foods. Not only does chemistry detect these adulterants, but, alas, too often it shows how they can be made. It must be admitted, however, that chemistry is always willing to expiate the sins which are performed in her name, and more than willing to punish the sinner. Often one of the principal recommendations of a food adulterant is the difficulty of its detection, but, no matter how great this difficulty may be, chemistry has never failed to supply the means to detect the fraud and bring the culprit to justice.

Broadly, food adulterants may be divided into two categories: First, innocuous adulterants comprising those which are neutral or even nutritious and without bad effect upon the organism; second, nocuous adulterants consisting of that class of sophistications which are injurious directly or indirectly to health. It is evident that, according to circumstances, many kinds of adulteration may be sometimes in one class and sometimes in another. From the point of view of medical jurisprudence, therefore, the above classification is not important. In fact, I once heard a very distinguished expert^{*} say under oath that he believed that all adulterants, no matter how harmless they might seem, were injurious to health, because even if they did not injuriously affect the body they were an insult to the good taste and sensibilities of the person using them.

The principal processes of food adulteration may be classified as follows:

First. Adulteration secured by the elimination of some valuable constituent. The most common form of adulteration of this form perhaps is the sale of skim milk or partially creamed milk as the genuine article.

It is well known that in milking a cow the portions of the milk secured at the last are richer in fat than those secured at the beginning. Hence, a cow may be partially milked, and the product sold as whole milk, while the residue remaining in the udder may be subsequently extracted and masquerade as cream. Thus the very method of milking may become a means of adulteration.

*See testimony of Professor Prescott further on.

Second. The addition of some harmless diluent. Dairy products furnish another example of this practice illustrated in the hoary joke of the well and the milk pail.

Third. Adulteration by the substitution of a cheaper for a dearer product. This form of adulteration is illustrated in the preparation and sale of cotton-seed oil as olive oil, or of oleomargarine as butter, or of horse flesh as beef.

Fourth. Adulteration by coloring an inferior product to resemble a superior. This is a very common form of adulteration. It is shown in the coloring of green vegetables by copper salts, as, for instance, the French peas which are very much liked and so commonly eaten, or in the coloring of butter, giving the butter of inferior quality the tint of a superior article, or in the coloring of oleomargarine so as to resemble butter, and the coloring of preserved meats to match the natural tints.

Fifth. Food adulteration by the addition of antiseptics. This is probably the most common of all forms of adulteration and all perishable articles of food have become illustrations to a greater or less degree of this class.

In considering the problems relative to the influence of adulterated food products on health, I realize the practical impossibility of defining in absolute terms the extent of the injury which may result in any given case. Food is the fundamental factor in individual and national advancement. It may be said, *ceteris paribus*, that that individual or nation is the strongest and best which is the best fed. Therefore, the study of the effect of food upon the health lies at the very basis of social and economic progress. It is well to safeguard the education of children and of youth; it is important that the religious and moral influences that surround them should be carefully considered; but before this comes the necessity of nourishment. Long before the infant knows good from evil, or noun from verb, it realizes the necessity of sustenance. Mistakes which are made at the beginning are difficult of correction, and therefore the character of the foods of infants and children is a problem of the first importance.

Unfortunately, or fortunately, fashionable civilized life has brought largely into discredit nature's method of nourishing infants, and hence we have thrown upon the market a legion of so-called infants' foods, many of which, I am sorry to say, are not exactly suited to the juvenile digestive functions. It may be stated with certainty that what would be considered a healthy and unadulterated food for an adult might with justice be considered an unwholesome and adulterated food for an infant.

There is perhaps no other subject to which the attention of the medical fraternity could be so profitably directed as to the careful study of the character of the infants' foods offered as a substitute for mother's milk. Another point which should be taken into consideration here is this: That the injury produced by artificial or adulterated foods in the infant lasts probably through life, if life be continued to any length of time, or hastens the death of the child. On the other hand, the adult and healthy stomach may sustain without injury the exhibition of adulterated foods to a limited extent. Therefore it is evident that the age limit is an important factor in the study of this subject. It is plain, without argument, that infants' food should correspond as nearly as possible to the average healthy milk of the mother. Its

chemical composition can be closely imitated in the artificial food which, of course, in the case of infants, should be the milk of the cow or other domesticated animal modified to resemble as nearly as possible the mean composition of mother's milk.

In the case of adulterated foods the questions which arise are extremely complicated. I have just alluded to the fact that the healthy adult stomach can bear with impunity the exhibition of adulterants at least for a time. It is hardly fair, however, so assume from this fact that such adulterants are harmless. Rather should we judge them from their accumulative effect; that is, the final effect which their continued use would produce. They must also be judged largely from the effect which they will have upon the digestive systems disordered or weakened by disease or advancing years. In other words, the duty of the law and of the medical profession is to protect the weak and the helpless rather than the strong and independent. It is safe, therefore, to predicate this rule, viz: That that form of adulteration which by any final action upon a healthy organism, or by any immediate action upon a weakened organism, produces harmful effects should be prohibited unless plainly marked. On the other hand, those forms of adulterants which are plainly indicated upon the label of the food, and therefore work no deception upon the purchaser, may be permitted, providing they do not, under the above circumstances, produce any injurious effects.

It may be well at this point to state in detail a few of the forms of adulterants which typify the above statement.

I will first call attention to the fact that, in my opinion, there are some forms of adulterants which are not injurious to health. In this connection I may mention the food product known as glucose. Glucose is a term applied to a mixture of sugars derived from starch by hydrolysis. The hydrolytic effects are produced usually by a mineral acid, as, for example, sulphuric or hydrochloric acid. Now, it is perfectly evident that the hydrolysis of starch can not produce an injurious substance except when conducted in an improper manner. In the natural process of digestion starch, which is one of the most important foods, is hydrolyzed first by the saliva and finally by the secretions of the small intestines, particularly that of the pancreas. The final products are the same as those produced by artificial hydrolysis.

In my opinion, therefore, well-made glucose is a wholesome and nutritious food. When mixed with honey it is both palatable and nutritious, and this mixture is one of the most common forms of honey adulteration. Such an adulteration is to be condemned in the most unmeasured terms, but not because of the unwholesomeness of the product. If, on the other hand, glucose be manufactured with sulphuric acid containing a trace of arsenic, severe poisoning cases may result, as has been already noted in the case of the beer poisoning at Manchester.

The food fats of healthy animals, such as lard and tallow, can not be regarded as unwholesome products, either when consumed in connection with other portions of the carcass or as separate foods. These fats are universally employed in our kitchens, and there is no reason for believing that when they are combined to form a pure article, as oleomargarine, they possess any unwholesome properties. The fraudulent sale of oleomargarine as butter can not be too severely condemned, but, as is the case with glucose, not on account of unwhole-

someness. The same is true of the many vegetable oils, such as the oil of cotton seed, sunflower oil, and peanut oil, which have been largely employed as salad dressings in the place of olive oil. The adulteration of olive oil with these bodies is most reprehensible, but again the objections thereto can not rest on hygienic grounds. But I will not dwell longer on this form of harmless adulterants, since we are principally interested in the present instance with that other form of adulteration which it is commonly believed, directly or indirectly, sooner or later, produce injurious effects.

Among these may be reckoned a great many of the artificial colors. I have already spoken of the use of mineral salts, such as those of copper and zinc, for preserving the green color of vegetable foods. Many coal-tar colors are used for similar purposes, especially with animal products. A large list of such colors might be mentioned for use with fresh and preserved meats and with dairy products. Formerly white butter was colored yellow to resemble the more desirable varieties by the use of a vegetable substance called annatto. Lately this vegetable color, which by most persons is considered as harmless, has been almost entirely superseded by yellow coal-tar colors; in fact, it is difficult to obtain in the open market at the present day butter which has not been artificially colored. These coal-tar colors when taken in considerable quantities produce serious disturbances of the digestive organs. In the minute quantities employed it is probable that these colors are harmless, but the burden of proof rests upon those who use them.

The presumption of guilt lies upon them. It is easy to extract from the quantity of butter used by a hungry man at an ordinary meal a sufficient quantity of this coloring matter to dye a beautiful saffron a large tuft of white silk. This coloring matter is absolutely indigestible, and thus it is fair to assume that when it has been absorbed into the system it is eliminated slowly and with difficulty. The coloring of butter artificially is only an excuse for poor dairying, since if milk cows be properly fed they will produce the year round a rich yellow cream, giving a delicious butter of the most delicate natural tint. It is unfortunate that the public taste has been so educated, or perhaps better, vitiated, in the use of artificially colored butter that the more delicate tint of the natural article is a bar to its sale.

By far the most numerous and dangerous of the deleterious substances in foods are those which are added to prevent decay. The character of all common antiseptics which have been used for food preservation and the methods of detecting them on foods have been very thoroughly investigated by the Division of Chemistry of the Department of Agriculture.

In all, 67 different samples of antiseptics which are advertised in the market as being effective have lately been examined. Of these, 33 contained borax or boric acid; 8 were sulphites of sodium, potassium, or calcium; 5 contained salicylic acid or its sodium salts; 4 benzoic acid or its sodium salts; 1 was a mixture of boric and salicylic acids; 1 boric acid and ammonium fluorid; 3 formaldehyde; 2 pyroligneous acid; 1 ammonium; and 1 beta-naphthol.

From the above statement it will be seen that one-half of the antiseptics offered for sale consist of borax or boric acid. In passing, I may say that of all the common preservatives employed boric acid or its compounds seem to me to be the least objectionable. In fact, I will

even go so far as to say that I would not see much objection to the use of borax in certain food products if the name of the antiseptic and the quantity employed in each case were plainly described on the label. In other words, it does not appear from the evidence at our disposal that small quantities of borax exercise any injurious effects upon the healthy adult. The question of what effect it would have upon weakened organism or upon infants is reserved for further consideration.

The next most abundant class of antiseptics is composed of the sulphites. Sulphurous acid is a well-known preservative, and its efficiency in this direction when combined with a base is but little diminished. The sulphites as a rule are easily soluble, and these are readily mixed with moist or liquid food products. In the form of a fine powder sulphites are easily applied to smooth surfaces, such as meats, and with very happy effects in preventing decay.

By far the most objectionable of the antiseptics contained in the 67 samples referred to is salicylic acid. As a preservative substance salicylic acid probably is to be preferred to any other if its effects upon digestion are not taken into account. It is cheap, white in a powder, or colorless in solution, almost tasteless, and extremely effective as a germicide. Its use, however, even in small quantities, is to be unqualifiedly condemned. It deranges digestion, interferes with assimilation, and exercises a generally deleterious effect upon the system.

It must not be supposed that in buying 67 samples in the open market we secured every variety of preservative manufactured. There are many which are not on the list, notably saccharin and nitrate of potassium. Of these, saccharin is highly objectionable, while nitrate of potassium in condimental doses may be permitted. Formaldehyde has lately come into prominent use as a preservative of milk and cream. The quantities employed are minute, but there is no doubt of the highly injurious effects of even minute quantities upon infants and weakened adults. The temptation to keep the baby's milk sweet by the addition of a little formaldehyde is indeed great, but it should be resisted.

The use of fluorin as a preservative is somewhat dangerous and fluo-rids should be rigorously excluded unless marked, at least until it is demonstrated that they are harmless.

The preservatives above referred to are often sold under trade names which give no clear idea of their composition. Some of these names are as follows: Dry Antiseptic, Superlative Preserving Powder, Preserving Salts, Nonpareil Preservative, Preservaline, Bleachine, Ozone Antiseptic Compound, Blue Seal Preservative, Freeze-em, Icine, Per-Algretti, Anti-fermentine, Preservite, Iceline, Freezine, Milk Sweet, Extract of Hickory Smoke, Liquid Smoke, etc. The sale of injurious substances under such fanciful names is a crime against the community, and those who engage in it ought to be adequately punished.

I have already called attention to the fact that if the pure-food legislation now pending should be enacted by Congress, the Secretary of Agriculture will be empowered, with the assistance of a board of experts, to study carefully in an unbiased way all substances alleged to be deleterious to the health. When such a study as this is completed the medical problems involved in this matter will be more easy of solution. I almost hesitate to say anything in regard to the legal

difficulties which attend the securing of pure food. In the present state of affairs there is such a difference in State and municipal laws as to constitute a perfect legal maze. Manufacturers and dealers in sophisticated goods who wish to be honest, and we may assume that they all do, are confronted with a different state of affairs in almost every State of the Union. One of the strongest reasons for pure-food legislation lies in the fact that such legislation would be accepted as a standard or guide in the making of new laws, and would also be a potent factor in securing modifications of all existing laws so as to approach a harmonious system.

Another matter, which is of interest from a legal and medical point of view, is the method now in vogue of employing experts. It is evident that the best results from expert testimony will be reached only when the court and not the litigant is the employing party. What we most want in such testimony is facts, and these are difficult to get from ex parte evidence even if it be of an expert character. It appears to me, therefore, that the best service which can be rendered just now to the cause of pure food would be to secure the enactment of the Hepburn bill, or some similar measure, into a law. In my opinion there is no public agitation which will result in greater good than that which relates to the purity of foods. Life is the strongest passion of the race, and yet we find ourselves taking little interest in that factor which, more than any other, affects and lengthens all our lives. Pure food, well prepared and well digested, will add many years to the average life of man, while at the same time it will make his life freer from disease and more productive of good; his powers will be conserved; his happiness increased, and his sojourn on earth made more useful and grateful in every way.

A very complete view of the extent of adulteration practiced in food products has been prepared by the Secretary of Agriculture at the request of the Senate Committee on Manufactures and is submitted as Exhibit 1 of this paper. An extensive investigation of the practices of food adulteration in the United States was undertaken about two years ago by the Senate Committee on Manufactures and is submitted as reference, Exhibit 2, of this paper, viz., Senate Report No. 516, submitted to the Senate February 28, 1900, and printed to accompany Senate Resolution 447, Fifty-fifth Congress.* This testimony has been summarized and briefed by the Industrial Commission, and printed as Senate Document No. 141, Fifty-fifth Congress, second session. A copy of this report is submitted as Exhibit No. 3 of this paper.

The particular attention of the committee is requested to pages 137 to 154 inclusive of this report, and also to the digest of the laws of the several States of the United States, on pages 154 and following of the report referred to. It is stated on pages 137 and 138 that—

In many cases the language used in these later laws is practically identical in the different States. After defining food in a broad manner, especially so as to include articles of drink, they usually declare that food shall be deemed adulterated in the following cases:

First, if any substance or substances have been mixed with it, so as to reduce or lower or injuriously affect its quality or strength; second, if an inferior or cheaper substance or substances have been substituted wholly or in part for it; third, if any valuable constituent have been wholly or in part abstracted from it; fourth, if it is an imitation of or sold under the name of another article; fifth, if it consists wholly or in part of a diseased, decomposed, putrid, or rotten animal or vegetable substance,

* Not intended for republication, but only for reference.

whether manufactured or not; sixth, if it is colored, coated, polished, or powdered whereby damage is concealed, or if it is made to appear better or of greater value than it really is; seventh, if it contain any added poisonous ingredient or any ingredient which may render it injurious to the health of a person consuming it.

The above quotation shows that in the later and more comprehensive laws of several States, the language used for defining adulteration is almost exactly similar to that which is found in the Hepburn bill of to-day.

The more important features of the pure-food laws of foreign nations have been studied and abstracted by the Bureau of Chemistry of the Department of Agriculture, for the purpose of aiding that Bureau in executing the laws of Congress in regard to the character of imported food products and of exported food products from this country to countries where chemical and physical tests are required of food products before they are admitted for sale. This information is published in Bulletin 61, of the Bureau of Chemistry, and is submitted as Exhibit 4, of this paper.

A digest of the pure food and drug laws of the United States and foreign countries, together with court decisions affecting same, has been prepared by Senator Mason, of the Committee on Manufactures of the Senate, and printed as Report No. 3, Fifty-seventh Congress, first session. A copy of this report is submitted as Exhibit No. 5, of this paper.

The committee has already learned of the indorsement which the Hepburn bill has received. It is set forth in the Report No. 1426, Fifty-sixth Congress, first session, to accompany the favorable report made by this committee of the Brosius bill of the last Congress. This report was written by Mr. Barham, and is made a part of this paper as Exhibit 6. On page 6 of this report is found the list of the organized bodies which have indorsed this measure, viz: The American Chemical Society, The American Medical Society, American Bee Keepers' Association, American Pomological Society, American Pharmaceutical Society, Association of American Agricultural Colleges and Experiment Stations, Association of Dairy and Food Commissioners, Association of Official Agricultural Chemists, National Confectioners' Association, National Board of Trade, National Grange, National Alliance and Industrial Union, National Retail Grocers' Association, National Millers' Executive Committee, National Pure Food Association, National Preservers and Sirup Refiners' Association, National Retail Liquor Dealers' Association, Proprietary Association of America, United States Brewers' Association, Woman's Christian Temperance Union, Wholesale Druggists' Association.

So far, no evidence has been presented to this committee to show that any of these associations has withdrawn its support from this measure.

It will be useful to mention here a few points connected with the genesis of the Hepburn bill. One of the earliest bills regulating interstate commerce in food products which was presented to the Congress of the United States was S. 279, Fifty-first Congress, first session, introduced by Senator Faulkner. The cause of the pure-food bill in the Senate of the Fifty-first Congress was championed by Senator Paddock, who introduced a substitute for the Faulkner bill on February 28, 1890. Various amendments and other changes were made in this bill during the Fifty-first Congress and also in the Fifty-second Congress.

and the bill was finally passed by the United States Senate on March 9, 1892. This bill was immediately introduced into the House of Representatives on the 11th of March, 1892, under the title S. 1, Report No. 914, and referred to the Interstate and Foreign Commerce Committee. On March 15, 1892, the Committee on Interstate and Foreign Commerce was discharged from further consideration of the bill and it was referred to the Committee on Agriculture. On March 29, 1892, the Committee on Agriculture made a favorable report of this bill, and it was placed upon the Calendar of the House.

This historical sketch represents the most nearly successful attempt ever made by the Congress of the United States to enact a national pure-food law. It was found impossible to get a consideration of this bill in the House, under the rules which then existed, and thus the consummation of the legislation was prevented. The bill thus placed upon the Calendar of the House is the direct ancestor of the Hepburn bill; in fact, more than that can be said: It is practically the Hepburn bill. It may be of utility to the members of this committee to have this bill in convenient form to compare with the bill No. 9677, which was favorably reported from this committee with a few amendments and placed upon the Calendar of the House.

[H. R. 9677, introduced by Mr. Brosius,
March 16, 1900.]

[S. 1. (Report No. 914.) In the House
of Representatives, March 11, 1892.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of protecting the commerce in food products and drugs between the several States and in the District of Columbia and in the Territories of the United States and foreign countries, the Secretary of Agriculture shall organize the chemical division of the Department of Agriculture into a bureau of chemistry, which shall have the direction of the chemical work of the present division of chemistry and of the chemical work of the other Executive Departments whose respective heads may apply to the Secretary of Agriculture for such collaboration, and which shall also be charged with the inspection of food and drug products, as hereinafter provided in this Act. The Secretary of Agriculture shall make necessary rules and regulations for carrying out the provisions of this Act, under which the director of the bureau of chemistry shall pro-

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of protecting the commerce in food products and drugs between the several States, the District of Columbia, and the Territories of the United States and foreign countries, the Secretary of Agriculture shall organize in the Department of Agriculture a section to be known as the food section of the chemical division, and make necessary rules governing the same, to carry out the provisions of this Act under direction of the chief chemist, whose duty it shall be to procure from time to time, under rules and regulations to be prescribed by the Secretary of Agriculture, and analyze or cause to be analyzed or examined samples of foods and drugs offered for sale in any State or Territory other than where manufactured or in a foreign country, provided the same be in original or unbroken packages. The Secretary of Agriculture is hereby authorized to employ such chemists,

cure from time to time, or cause to be procured, and analyze or cause to be analyzed or examined, chemically, microscopically, or otherwise, samples of foods and drugs offered for sale in original unbroken packages in the District of Columbia, in any Territory, or in any State other than that in which they shall have been respectively manufactured or produced, or from a foreign country, or intended for export to a foreign country. The Secretary of Agriculture is hereby authorized to employ such chemists, inspectors, clerks, laborers, and other employees as may be necessary to carry out the provisions of this Act and to make such publication of the results of examinations and analyses as he may deem proper.

SEC. 2. That the introduction into any State or Territory, or the District of Columbia, from any other State or Territory, or the District of Columbia, or from any foreign country, or shipment to any foreign country, of any article of food or drugs which is adulterated or misbranded, within the meaning of this Act, is hereby prohibited; and any person who shall ship or deliver for shipment from any State or Territory, or the District of Columbia, to any other State or Territory, or the District of Columbia, or to a foreign country, or who shall receive in any State or Territory, or the District of Columbia, from any other State or Territory, or the District of Columbia, or foreign country, or who, having received, shall deliver, in original unbroken packages, for pay or otherwise, or offer to deliver to any other person, any such article so adulterated or misbranded, within the meaning of this Act, or any person who shall sell or offer for sale in the District of Columbia, or the Territories of the United States such adulterated, mixed, misbranded, or imitated

inspectors, clerks, laborers, and other employees as may be necessary to carry out the provisions of this Act.

SEC. 2. That the introduction into any State or Territory or the District of Columbia, from any other State or Territory or the District of Columbia or foreign country, of any article of food or drugs which is adulterated or misbranded within the meaning of this Act is hereby prohibited, and any person who shall knowingly ship or deliver for shipment from any State or Territory or the District of Columbia or foreign country, to any other State or Territory or the District of Columbia or to a foreign country, or who shall knowingly receive in any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia or foreign country, or who, having so received, shall knowingly deliver, for pay or otherwise, or offer to deliver to any other person, in original unbroken packages, any such article so adulterated or misbranded within the meaning of this act, shall be guilty of a misdemeanor, and for such offense be fined not exceeding two hundred dollars for the first offense, and for each subsequent offense not

foods or drugs, or export or offer to export the same to any foreign country, shall be guilty of a misdemeanor, and for such offense be fined not exceeding two hundred dollars for the first offense, and for each subsequent offense not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court.

SEC. 3. That the director of the bureau of chemistry shall make, or cause to be made, under rules and regulations to be prescribed by the Secretary of Agriculture, examinations of specimens of foods and drugs offered for sale in original unbroken packages in the District of Columbia, in any Territory, or in any State other than that in which they shall have been respectively manufactured or produced, or from any foreign country, or intended for shipment to any foreign country, which may be collected from time to time in various parts of the country. If it shall appear from any such examination that any of the provisions of this Act have been violated, the Secretary of Agriculture shall at once certify the facts to the proper United States district attorney, with a copy of the results of the analysis, duly authenticated by the analyst under oath.

SEC. 4. That it shall be the duty of every district attorney to whom the Secretary of Agriculture shall report any violation of this Act to cause proceedings to be commenced and prosecuted without delay for the fines and penalties in such case provided.

exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court.

SEC. 3. That the chief chemist shall make, or cause to be made, under rules and regulations to be prescribed by the Secretary of Agriculture, examinations of specimens of food and drugs offered for sale in original or unbroken packages in any State or Territory other than where manufactured, or in a foreign country, which may be collected from time to time, under rules and regulations to be prescribed by the Secretary of Agriculture, and under his direction in various parts of the country, and publish in bulletins the results of such analyses. But the names of manufacturers or venders of such foods or drugs analyzed shall in no case be published in such bulletins until after conviction in the courts of violation of this Act. If it shall appear from examination that any of the provisions of this Act have been violated, the Secretary of Agriculture shall at once cause a report of the fact to be made to the proper United States district attorney, with a copy of the results of the analysis, duly authenticated by the analyst under oath.

SEC. 4. That it shall be the duty of every district attorney to whom the Secretary of Agriculture shall report any violation of this Act to cause proceedings to be commenced and prosecuted without delay for the fines and penalties in such case provided, unless upon inquiry and examination, he shall decide that such proceedings can

SEC. 5. That the term "drug," as used in this Act, shall include all medicines and preparations recognized in the United States Pharmacopœia for internal or external use. The term "food," as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or domestic animals, whether simple, mixed, or compound. The term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement regarding the ingredients or substances contained in such article, which statement shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory, or country in which it is manufactured or produced.

SEC. 6. That for the purposes of this Act an article shall be deemed to be adulterated—

In case of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality, or purity, as determined by the test laid down in the United States Pharmacopœia, official at the time of the investigation.

Second. If its strength or purity fall below the professed standard under which it is sold.

Third. If it be an imitation of or offered for sale under the name of another article.

In the case of confectionery:

If it contains terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors, or other ingredients deleterious or detrimental to health.

not probably be sustained, in which case he shall report the facts to the Secretary of Agriculture.

SEC. 5. That the term "drug," as used in this Act, shall include all medicines for internal or external use. The term "food," as used herein, shall include all articles used for food or drink by man, whether simple, mixed, or compound. The term "misbranded," as used herein, shall include all drugs, or articles of food, or which enter into the composition of food, the package or label of which shall bear any statement purporting to name any ingredients or substances as not being contained in such article, which statement shall be false in any particular; or any statement purporting to name the substances of which article is made, which statement shall not fully give the names of all the substances contained in such article in any measurable quantities.

SEC. 6. That for the purposes of this Act an article shall be deemed to be adulterated—

In the case of drugs:

First. If, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality, or purity according to the tests laid down therein.

Second. If, when sold under or by a name not recognized in the United States Pharmacopœia, but which is found in some other pharmacopœia or other standard work on *materia medica*, it differs materially from the standard of strength, quality, or purity according to the tests laid down in said work.

Third. If its strength or purity fall below the professed standard under which it is sold.

Fourth. If it be an imitation of and sold under the specific name of another article.

In the case of food:

First. If any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall deceive or tend to deceive the purchaser.

Second. If any substance or substances has or have been substituted wholly or in part for the article, so that the product when sold shall deceive or tend to deceive the purchaser.

Third. If any valuable constituent of the article has been wholly or in part abstracted, so that the product, when sold, shall deceive or tend to deceive the purchaser.

Fourth. If it be an imitation of or offered for sale under the specific name of another article.

Fifth. If it be mixed, colored, powdered, or stained in a manner whereby damage or inferiority is concealed, so that such product, when sold, shall deceive or tend to deceive the purchaser.

Sixth. If it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it.

Seventh. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or is an imitation, either in package or label, of another substance of a previously established name, or which has been trade-marked or patented.

Eighth. If it contains a whole or any part of a diseased, filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter: *Provided*, That an article of food which does not contain any added poisonous

In the case of food or drink:

First. If any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall be calculated and shall tend to deceive the purchaser.

Second. If any inferior substance or substances has or have been substituted wholly or in part for the article, so that the product, when sold, shall tend to deceive the purchaser.

Third. If any valuable constituent of the article has been wholly or in part abstracted, so that the product, when sold, shall tend to deceive the purchaser.

Fourth. If it be an imitation of and sold under the specific name of another article.

Fifth. If it be mixed, colored, powdered, or stained in a manner whereby damage is concealed, so that such product, when sold, shall tend to deceive the purchaser.

Sixth. If it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it.

Seventh. If it consists of the whole or any part of a diseased, filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or of an animal that has died otherwise than by slaughter: *Provided*, That an article of food or drug which does not contain any added poisonous ingredient shall not be deemed to be adulterated in the following cases:

or deleterious ingredients shall not be deemed to be adulterated in the following cases:

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not included in definition fourth of this section.

Second. In the case of articles labeled, branded, or tagged so as to plainly indicate that they are mixtures, compounds, combinations, imitations, or blends: *Provided*, That the same shall be labeled, branded, or tagged, as prescribed by the Secretary of Agriculture, so as to show the exact character thereof: *And provided further*, That nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this Act may require to secure freedom from adulteration or imitation: *Provided further*, That no dealer shall be convicted under the provisions of this Act when he is able to prove a written guaranty of purity, in a form approved by the Secretary of Agriculture, as published in his rules and regulations, signed by the manufacturer, or the party or parties from whom he purchased said articles: *Provided also*, That said guarantor or guarantors reside in the United States. Said guaranty shall contain the full name and address of the party or parties making this sale to the dealer, and said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach in due course to the dealer under the provisions of this Act.

SEC. 7. That it shall be the duty of the Secretary of Agriculture to fix standards of food products when advisable, and to determine

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not included in definition fourth of this section.

Second. In the case of articles labeled, branded, or tagged so as to plainly indicate that they are mixtures, compounds, combinations, or blends.

Third. When any matter or ingredient has been added to the food or drug because the same is required for the production or preparation thereof as an article of commerce in a state fit for carriage or consumption, and not fraudulently to increase the bulk, weight, or measure of the food or drug, or conceal the inferior quality thereof: *Provided*, That the same shall be labeled, branded, or tagged so as to show them to be compounds and the exact character thereof: *And provided further*, That nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary medicines to disclose their trade formulas.

Fourth. Where the food or drug is unavoidably mixed with some extraneous matter in the process of collection or preparation.

the wholesomeness or unwholesomeness of preservatives and other substances which are or may be added to foods, and to aid him in reaching just decisions in such matters he is authorized to call upon the Director of the Bureau of Chemistry and the chairman of the committee on food standards of the Association of Official Agricultural Chemists, and such physicians, not less than five, as the President of the United States shall select, three of whom shall be from the medical departments of the Army, the Navy, and the Marine-Hospital Service, and not less than five experts, to be selected by the Secretary of Agriculture by reason of their attainments in physiological chemistry, hygiene, commerce, and manufactures, to consider jointly the standards of all food products (within the meaning of this Act), and to study the effect of the preservatives and other substances added to food products on the health of the consumer; and when so determined and approved by the Secretary of Agriculture such standards shall guide the chemists of the Department of Agriculture in the performance of the duties imposed upon them by this Act, and shall remain the standards before all the United States courts. It shall be the duty of the Secretary of Agriculture, either directly or through the Director of the Bureau of Chemistry and the chairman of the committee on food standards of the Association of Official Agricultural Chemists and the medical officers and experts before mentioned, to confer with and consult, when so requested, the duly accredited representatives of all industries producing articles for which standards shall be established under the provisions of this Act.

SEC. 8. That every person who manufactures or produces for ship-

SEC. 7. That every person who manufactures for shipment and

this Act, and is transported or being transported from one State to another for sale, or if it be sold or offered for sale in the District of Columbia and the Territories of the United States, or if it be imported from a foreign country for sale, or if intended for export to a foreign country, shall be liable to be proceeded against in any district court of the United States, within the district where the same is found and seized for confiscation, by a process of libel for condemnation. And if such article is condemned as being adulterated the same shall be disposed of as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the Treasury of the United States, but such goods shall not be sold in any State contrary to the laws of that State. The proceedings of such libel cases shall conform, as near as may be, to proceedings in admiralty, except that either party may demand trial by jury of any issue of fact joined in such case; and all such proceedings shall be at the suit of and in the name of the United States.

A careful comparison of the two bills shows no essential difference in principle whatever. Three successive national pure food congresses representing all interested parties, manufacturers, jobbers, wholesale and retail dealers and consumers have approved this bill, and thus it stands before us to-day representing the longest line of descent, the greatest number of interested parties, and the best thought and experience of many years of hard and faithful labor.

The principal characteristics of this bill are its broad views in regard to the nature of adulteration and its freedom from any discrimination in favor of one food product against another. It also includes in its scope the adulteration of drugs, which is a matter of the greatest consequence to the public. This part of the bill, however, while most desirable and even necessary, does not attach itself absolutely to the food section, and hence will not be considered in this paper.

The Hepburn bill, therefore, is presented to the consideration of this committee at the present time with all the authority which its long life justly entitles it to, together with the approval, after full and free conference of its provisions by representative organizations of interested parties, by the further fact that it has once passed the Senate of

meaning of this act, and is transported, or is being transported from one State to another, for sale, and is still in the original, or unbroken packages, shall be liable to be proceeded against, in any district court of the United States, within the district where the same is found and seized for confiscation, by a process of libel for condemnation. And if such article is condemned as being adulterated, the same shall be disposed of as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the Treasury of the United States. The proceedings in such libel cases shall conform, as near as may be, to proceedings in admiralty, except, that either party may demand trial by jury, of any issue of fact joined in such case, and all such proceedings shall be at the suit of and in the name of the United States.

the United States and has twice been favorably reported by committees of the House of Representatives, the last time by this committee, on May 10, 1900, and placed upon the Calendar of the House and ordered to be printed. It is evident, therefore, that only the most weighty reasons should be allowed to induce this committee to make any radical departure from established precedent in the character of legislation recommended for the favorable action of Congress.

This committee not only hears the evidence and arguments introduced at the present time, but also has within its view the previous hearings which this bill has had, the indorsements which it has received, and the almost unanimous desire on the part of the American public for its enactment into a law. It seems to me there can be no valid reason any longer for attacking this problem by piecemeal. The fact that some action is demanded is sufficiently illustrated by a list of the pure-food bills which have been introduced into the Congress of the United States since the time of the introduction of the bill by Mr. Faulkner, already alluded to. Following is a list of the pure-food bills introduced into the Senate from the date mentioned up to the present time. This list may not be complete, but it includes all the bills which I can find any record of at the present time.

No.	Date.	Introduced by—
3991	June 8, 1890	Mr. Paddock. (Substitute for S. 279, introduced by Mr. Faulkner, of which we have no copy.)
3991	Feb. 4, 1891	Mr. Paddock.
1	Dec. 10, 1891	Mr. Paddock, amendment to above, 3991.
*1	Mar. 11, 1892	Mr. Paddock.
1488	Jan. 11, 1892	Mr. Hiscock.
	Mar. 14, 1892	
2984	Apr. 22, 1892	Mr. Wilson.
3796	Jan. 30, 1893	Mr. Faulkner.
471	Mar. 18, 1897	Mr. Gallinger.
4144	Mar. 16, 1898	Mr. Faulkner.
2048	Jan. 3, 1900	Mr. Allen.
2049	....do.....	Do.
2050	....do.....	Do.
2222	Jan. 8, 1900	Mr. Hansbrough.
3618	Mar. 15, 1900	Mr. Proctor.
3796	Mar. 26, 1900	Mr. Jones.
4047	Apr. 6, 1900	Mr. Foster.
2426	Jan. 15, 1900	Mr. Mason. (Accompanied by amendments.)
5262	Dec. 18, 1900	Mr. Mason.
1347	Dec. 9, 1901	Do.
3015	Jan. 20, 1902	Do.
3240	Jan. 27, 1902	Mr. Depew.
3342	Jan. 29, 1902	Mr. Hansbrough.

HOUSE BILLS.

288	Dec. 18, 1889	Mr. Conger. (As amended by 7346.)
7346	.....	Mr. McClammy. (No copy.)
11297	July 8, 1890	Mr. Turner.
109	Jan. 5, 1892	Mr. Holman.
4438	Jan. 21, 1892	Mr. Smith.
8608	May 6, 1892	Mr. Meredith.
3717	Dec. 12, 1899	Mr. Grout.
4618	Dec. 18, 1899	Mr. Babcock.
6442	Jan. 16, 1900	Mr. Glynn.
7667	Jan. 30, 1900	Mr. Sherman.
11543	May 14, 1900	Mr. Wadsworth (to amend an act defining butter, approved Aug. 2, 1886, no copy).
5441	Dec. 18, 1897	Mr. Brosius.
2561	Dec. 7, 1899	Do.
6246	Jan. 15, 1900	Do.
9677	Mar. 16, 1900	Do.
1426	May 10, 1900	To accompany H. R. 9677. Report. * Report 914.

HOUSE BILLS—Continued.

No.	Date.	Introduced by—
276	Dec. 2, 1901	Mr. Sherman.
12973	Dec. 19, 1900	Mr. Brosius.
4342	Dec. 10, 1901	Mr. Kahn.
3109	Dec. 6, 1901	Mr. Hepburn.
9351	Jan. 18, 1902	Mr. Warner.
9980	Jan. 28, 1902	Mr. Sherman (accompanied by report 258).
9352	Jan. 18, 1902	Mr. Mann.
12348	Mar. 10, 1902	Mr. Corliss.

I would now like to state to the committee, as a result of previous discussions, and also those which have been lately held before it, some of the points of superiority in the Hepburn bill, as compared with any other bill which is now pending for consideration.

In the first place, the Hepburn bill covers the whole field of adulteration. Compared with this other bills attack only a single feature, as, for instance, the adulteration injurious to health.

It has been urged before the committee that it is not the province of Congress to protect the people against frauds in foods, but against injurious substances. This latter contention everyone agrees to, but it is hard to say on what grounds the argument can be stopped at injurious substances and not include those of a fraudulent nature. In fact, this committee and the House of Representatives have already placed themselves on record as opposed to frauds in foods. This committee has lately recommended a bill to prevent the misbranding of food products, a worthy object and one which is fully covered in all of its details by the Hepburn bill, and this bill has passed the House. The House of Representatives has lately passed a law to punish the fraudulent sale of oleomargarine; another worthy object which has been endorsed by a large majority in the House of Representatives.

Had it not been for certain features of that bill which were regarded as of a proscriptive and unconstitutional nature, I believe that its principle would have commanded every vote upon the floor of the House. Thus it is seen that both in theory and in practice this committee and the House of Representatives have placed themselves on record as positively in favor of the regulation of fraudulent practices of commerce in foods. Hence there seems to be no place for an argument in favor of restricting the pure-food bill, which this committee will doubtless report, to a single feature of adulteration.

Another point which I would like to present to the committee is this. Those who have argued for a bill against injurious food products alone represent only one branch of industry. In so far as has been stated before this committee, the advocates of this measure are either manufacturers of food products or dealers therein. Among the most ardent opponents of the Hepburn bill have been certain representatives of the National Retail Grocers' Association. They told you that there are 300,000 grocers in the United States, and that they represented 70,000 of these. The constitution of the National Retail Grocers' Association requires a per capita tax of 10 cents from each member affiliated with the association. At the convention in February the treasurer's statement shows receipts from this source of less than \$600. Thus, less than 6,000 grocers out of the 300,000 have been represented by the committee sent here. Not a single person representing a consumer has

appeared here to push this bill along, although that feature of it which punishes the addition of poisonous or injurious substances to foods meets with the unqualified indorsement of every lover of pure-food legislation.

On the other hand, the great consuming public has a right to be protected against frauds perpetrated by interstate commerce. In the testimony offered by Dr. Frear it was seen that by far the largest part of adulterated food products examined in the State of Minnesota was sent into that State from other States. In fact, when the laws of a State prevent the sale of a certain character of food products therein, these products are usually dumped onto some neighboring State where the laws are not so rigid nor so strictly enforced.

The principle of the control of railway rates in interstate commerce has been thoroughly established by the action of Congress and by the decision of the courts, hence there can be no possible objection to food legislation of a similar kind on constitutional grounds. It is stated by those who have argued for a pure-food bill restricted to deleterious substances that the purpose of this bill is to protect the people of one State against the evil practices of the people of an adjoining State. Is the argument not just as sound when it comes to the protection of the people in one State against the fraudulent products of those residing in another State? There certainly can be no difference in principle, and if the argument is valid in one instance, as I admit, it must also be valid in the other instance.

Then, in addition to the consumers must be considered the producers of the raw materials from which the foods are made, viz, the farmer. No one during the present hearing has raised his voice to say a word for the farmer. He too is entitled to protection against evil practices of citizens of adjoining States. The farmer is entitled to an honest market where his goods can come into competition only with those true to their name and quality. The maker of butter in Indiana should not be brought into competition with oleomargarine made in Chicago and sold as butter in the State of Indiana. The bee keepers of California should not be brought into competition with the so-called honey made in Chicago out of glucose, and sold as honey all through the country. The manufacturer of maple sirup in Vermont should not be brought into competition with the so-called maple sirup made as described further on.

I mention Chicago, because it is the center of the manufacture of these three great articles which are sold fraudulently and to a greater extent probably than all other articles of adulterated foods combined. In other words, the city of Chicago is a great center of the manufacture of glucose, which is used in the making of fraudulent honey. It is the great center of the manufacture of oleomargarine, which is used as fraudulent butter. It is the great center of manufacture of so-called maple sirups, which are sold throughout the country in competition with genuine sirups made in Vermont and Ohio.

The question was asked here by a member of the committee in regard to the origin of these bills. I think, Mr. Chairman, that I have discovered the real author of these bills, and not only the author but the promoter and beneficiary thereof. I have this author here in court, and am now able to produce him. [Showing a bottle of glucose.]

The conditions which obtain in Chicago were stated with remarkable clearness and force by Mr. Graeme Stewart in the testimony he

gave before the Senate committee, found on page 73, Exhibit No. 2. He said:

I will say, Senator, that before I am examined I would like to make a statement in regard to the necessity of a national pure-food law. The various States throughout this country—Michigan, Illinois, Wisconsin, Minnesota, and other States—have passed pure-food laws; and in the distribution of merchandise—some kinds of merchandise—I find that at times errors are very likely to crop out in the shipping of goods in these States on account of the lack of uniformity, as the law of one State differs from the law of another, so that for the last ten years the merchants and manufacturers of Chicago have been clamoring for a national pure-food law, in the same manner that we clamored for a national bankruptcy act. It requires a lawyer for each State to know what the requirements are in each State in order to know the rules that prevail in them.

The CHAIRMAN (Mr. MASON). Your idea of a national law is to have it uniform?

Mr. STEWART. Yes, sir; so that we can ship goods without fear of violating any local law. I would like to have a national law to expedite business.

Mr. Stewart in his further testimony spoke particularly of the adulteration of coffee in the way of adding the imperfect beans known as "black-jack," and especially in the manner of adding gum tragacanth, glucose, and gum to coffee. (See p. 75 of Exhibit 2.)

Mr. Stewart also condemned the mixture of innocuous substances with spices and called such goods "scheme goods." (See p. 78, Exhibit No. 2.)

Quoting further from the testimony:

The CHAIRMAN. This term (referring to scheme goods) has been used here this morning several times, applying to commercial this and commercial that, which means an adulterated article. Is that largely used in the trade; is it a well-defined portion of the general trade?

Mr. STEWART. I think not. I think, as a rule, the wholesale grocers, who have roasting and grinding plants of their own and who make a business of grinding spices, are handling a pretty good class of goods; but I do believe that those people who handle carts and hay rakes and buggies and give them away with a hundred pounds of spices must handle a pretty poor grade of goods. They must make money somehow, but how I do not know.

In regard to jellies, Mr. Stewart said:

I do not believe there is 5 per cent of the jellies sold that are pure. I do not believe that. I am saying that from what I see going out in tube and in retail stores and everywhere.

Senator HARRIS. The adulterations are chiefly in the way of glucose?

Mr. STEWART. They put in glucose, a very small per cent, and acid of some kind to make it.

Senator HARRIS. What would be your idea of arriving at the purity there; by requiring them to be branded?

Mr. STEWART. My idea, Senator, is not to prohibit the sale of anything of that kind; that it shall be branded and sold for what it is.

Senator HARRIS. As oleomargarine dealers are required to do?

Mr. STEWART. Yes, sir.

Senator HARRIS. But suppose that it is difficult to distinguish the fact that some of these glucose combinations are unhealthy?

Mr. STEWART. I would not say that.

Senator HARRIS. It is only a question of honesty in dealing.

Mr. STEWART. To prevent the dishonest cutting of prices by jobbers and retailers. Many sell glucose jelly for half price, and you can't understand it.

The CHAIRMAN. And the same would apply to honey?

Mr. STEWART. Yes. * * * I have a very strong idea and opinion in regard to the branding of all goods just what they are.

These excerpts from Mr. Stewart's testimony show that he thoroughly comprehends the situation and understands the necessity for legislation and its scope. His testimony produced a very marked effect upon the members of the committee, since it summarized so completely the conditions existing in Chicago, and presumably in other

parts of the country, and foreshadowed the character of the legislation necessary to correct the evils. This legislation is exactly such as is found in the provisions of bill No. 3109, and the advocates of this measure are glad to have this approval of their purpose from a witness who perhaps knows more than any other person of the gigantic frauds in foods perpetrated in the vicinity in which he lives.

At this point, Mr. Chairman, I would like to present a matter of personal privilege relating directly to the question now before you. It is a dispatch sent from Washington in relation to these hearings and published in the Chicago Daily News, Thursday, March 13, 1902. It reads as follows:

Complaint may be made to President Roosevelt by the Chicago business men who are here during the passage of the Corliss pure-food bill against Dr. Wiley, Chief of the Bureau of Chemistry, Department of Agriculture. Dr. Wiley is actively opposing the efforts of the Chicago men and advocating the passage of the Hepburn bill. Each day during the hearings he has been in the committee room, and Graeme Stewart and his associates assert that his actions are a continuous violation of President Roosevelt's order that Government employees shall not lobby or meddle in legislative matters.

It was Dr. Wiley who caused such a fuss by appearing before the Ways and Means Committee recently and declaring that the intended reduction in the Cuban tariff would ruin the beet-sugar industry in this country. At that time complaint was made to President Roosevelt, but the President refrained from taking any action in the case upon the assurance by Secretary Wilson that Dr. Wiley had acted under instructions. In the present case Dr. Wiley makes the same excuse. He says he has been ordered by Secretary Wilson to attend the pure-food hearings as requested by Chairman Hepburn.

I presented this matter to the Secretary of Agriculture, and he said there was not a word of truth in it, in so far as related to him and the President. It is useful at this point in showing the character of some of the influences that are invoked to defeat the Hepburn bill.

Mr. George W. York, of 2661 North Bobey street, Chicago, states on page 211 of Exhibit No. 2, in answering the question regarding honey adulterated with glucose:

It should be sold as glucose instead of honey. We find that nearly all the wholesale groceries in this city, and in other cities also, adulterate it. In fact, I have found adulterated articles in the line of honey from St. Louis.

Q. You think the interests of the consumers of pure honey and of the producers of pure honey would be properly protected simply by a law which would require labeling?—A. I have no doubt of it. That is what we are working for in the bee-keeping associations and also in our publications.

Interesting testimony was also given by Mr. Maurice H. Scully, of Chicago, which will be found on pages 89 and following of Exhibit No. 2. On page 91 he says:

Q. You have stated what the ingredients are of the pure maple sirup. Now I wish you would state for the benefit of the committee—take your second grade of maple sirup, how do you make that?—A. Well, that is 60 per cent pure maple and 40 per cent glucose.

Q. Now take your third grade of maple sirup.—A. That has a less percentage of maple and a larger percentage of glucose.

Q. That is practically all of the adulterants which you use in making maple sirup?—A. Yes.

Q. You have competitors making maple sirup all over this country, haven't you?—A. Yes, sir.

Q. Do you know of any adulterants that they use?—A. I do not. I don't believe they use any outside of glucose.

To an outsider it does seem somewhat strange that so many people who come down here from the great city of Chicago to advocate a pure-food bill should leave out of consideration absolutely those proc-

esses for which Chicago is so famous. Now, it is certainly right and proper for every person to try to protect the commerce of his own community, and there is no doubt in the world that a pure-food law which would leave out of consideration everything fraudulent in foods would be immensely advantageous to the commerce of Chicago, but would it be to the public? Would it be the conservation of public morals and public honesty? Would it help the farmer in Vermont and Ohio and in California, and in all the dairy States, to have imitations of their products sold without branding by interstate commerce throughout the markets of this country? Would it be beneficial to the consumer, who would be fraudulently deprived of a large part of his income?

Who believes for a minute that to-day in Chicago, at the finest hotel, in asking for maple sirup he would get anything better than that which Mr. Scully has so graphically described? Is it not true that oleomargarine made in Chicago is to-day sent into every State, and county almost, of this great Republic, and is it not admitted by everyone that the larger part of this product reaches the table of the consumer in the guise of butter? Will this committee, therefore, listen to the pleading of one State or one branch of a State, and neglect the cries for help that have gone up to it for years from the great American people, from the farmer who makes the raw materials, from the manufacturer who wants to sell them in an honest way, and from the wholesale and retail dealer who wants to carry on an honest business, and from the consumer who wants to buy an honest product? Surely this committee can not so far neglect the rights of these great classes of people as to fail to include in its legislation not only a single branch of the evil from which we suffer, but the whole of it.

No more machinery will be required to execute a pure-food law which is broad and comprehensive in its nature than one which pertains only to a single object. It will require no more food commissioners; it will require no more chemists or inspectors; it will require no larger laboratories; it will require no more expensive legal machinery. Why not, then, in striking at this evil, strike at its root and not at a branch? All the evidence which has been collected by the Senate committee, by the investigations in the Department of Agriculture, which have been continued now over a period of sixteen years, and by all the researches and examinations made in the various States of the United States and in the countries of Europe, has shown, it is true, the great evils of the adulteration of foods with deleterious products, but it has also shown that the extent of this adulteration with deleterious substances is very small compared with the fraudulent adulterations at which the Hepburn bill also strikes.

If our friends are so in earnest about pure foods, why do they fight that portion of the bill which strikes at frauds in foods? Can they offer any explanation which is logical? Can they give any reason which is convincing? Can they go before the American people and explain the curious action which they are taking?

The pathetic interest manifested by the manufacturers and distributors of food products in the health of the community is only equaled by the solicitude of the sugar trust for the welfare and prosperity of the Cuban planter. This eagerness to prevent the evil deeds of others forcibly reminds one of the zeal of Sir Hudibras and his friends—

Compounding sins they are inclined to
By damning those they have no mind to.

This cry to save the frauds in foods from regulation doesn't come from the farmer, who grows the raw materials. It doesn't come from the health officers, who, if anyone, should be here to argue for the sole control of injurious substances. No board of health petitions this body to confine its legislation to substances injurious to health. No food commissioner of any State asks this body to confine its legislation to substances injurious to health. Do not the State authorities want a national law to aid them in the execution of their own laws? Does not every State law punish frauds in foods?

It appears from the evidence which has lately been given before this committee that the State laws in their rigid execution work great hardships to the retail dealer in compelling him to acquaint customers with the character of the goods purchased. It is claimed in this line, and this claim I think is true, that the State laws would naturally sooner or later conform to the national law regulating commerce in foods.

In regard to this matter Mr. J. J. Berry, of 280 South Clinton street, Chicago, maker of artificial maple sirups, said on page 97 of Exhibit 2:

Q. How do you mark them?—A. Well, they are branded pure for the brand that is pure.

Q. Take your second and third grades of maple sirup going to a State where they have no pure-food law. How is it branded there?—A. We simply sell it as maple sirup there. For instance, in this State a sirup is branded maple sirup and the buyer knows full well what he is getting on account of the price that he pays for the goods.

Q. That is, the merchant?—A. Yes.

Q. But the consumer?—A. Well, the consumer is misled, in my opinion.

Prof. A. S. Mitchell, of Milwaukee, Wis., testified, page 111, Exhibit 2, as follows:

Senator HARRIS. Before we take up the general discussion of pure food with you, what is your opinion as to the propriety of having a national law, a uniform law, which would compel the marking of substitutes, of what they are?

A. I think it is very desirable. It would form a basis for legislation in the various States, so that there will be a tendency to uniformity. Everything will be as good as the national law requires.

Mr. Henry G. Piffard, a physician in New York City, testified as follows, page 187, Exhibit 2:

Many adulterated articles are perfectly innocent as regards health, but are arrant frauds. The mixing of corn meal with wheat meal no one can complain of on sanitary grounds, but if I desire to purchase a pure wheat flour and am furnished with a mixture thereof I am defrauded. Legislation going as far as national authority will permit should be enacted, and with that as a basis and as a general guide the State legislation could supplement the acts of Congress by effective local laws.

Mr. Geo. W. York, of 2661 North Robey street, Chicago, testified as follows, page 215, Exhibit 2:

Q. You think that a national law regulating commerce between the States in adulterated honeys would be beneficial to the bee keeper?—A. I do think it would.

Q. Do you think it has ever been the practice among bee keepers themselves to adulterate their honey before bringing it to the market?—A. I do not.

Q. You think the adulteration is entirely accomplished by the jobbers?—A. I do.

Mr. Charles F. Gunther, a manufacturer, of 212 State street, Chicago, testified, page 306, Exhibit 2:

Q. You would consider, would you, Mr. Gunther, national legislation upon this subject of benefit to the people and at the same time a protection to the honest manufacturer?—A. Yes, sir; there is no doubt about it.

Q. And you would be in favor of national regulation of this subject?—A. Yes, sir; I think it is a grand thing.

Mr. Fred Pabst, a manufacturer of beer in Milwaukee, testified, page 311, Exhibit 2:

Q. First of all, you have been in the business a long time. What do you say as to a national law?—A. I think it would be a very good thing.

The CHAIRMAN. It would assist the honest manufacturer?

A. Yes, sir.

The CHAIRMAN. And protect the consumer?

A. Undoubtedly.

Mr. Gallus Thomann, manager of the literary bureau of the United States Brewers' Association, and secretary of that body, testified as follows, page 352, Exhibit 2:

Our bill is known in the Senate as the Faulkner bill and in the House of Representatives as the Brosius bill. We have contributed more, I believe, than any other class of manufacturers to the support of the pure-food congress. We also took action at a convention held in Detroit, Mich., in June following the second pure-food congress and approving of the Brosius pure-food bill and the Faulkner pure-food bill.

Prof. E. H. Jenkins, New Haven, Conn., testified as follows, Exhibit 2, page 455:

The CHAIRMAN. What would you think of having a national board, under the direction of the Department of Agriculture—a national board or commission to be appointed by the President—to fix standards of foods and to control the use of conservatives generally?

A. I think that the fixing of standards for foods, or for certain foods, would certainly be a most desirable thing. As to the special means by which that could be accomplished I have not given the matter sufficient thought and I do not feel competent to speak. I think the thing is the right thing to be accomplished, and that such standards for certain foods ought to be fixed.

The CHAIRMAN. And you see the advantage, I suppose, of a national law as against State laws, because States might have conflicting laws, rules, and regulations on the same subject. A man may be a perfectly honest manufacturer and may send goods into your State marked in one way to comply with the laws of your State, and may have to mark or label them differently to send them into another State.

A. Yes, there is that objection. Manufacturers would have to brand their goods in different ways in order to meet local regulations.

Mr. Henry O. Havemeyer, president of the American Sugar Company testified as follows, page 467, Exhibit 2:

I will say that I am in hearty sympathy with the idea of having the consumer protected under Congressional action, because there is no way in which a consumer can protect himself, that I am aware of, against food adulterations, and the subject should be a matter of national legislation.

Mr. James Jackson, representing the fruit interests of the State of New York, testified as follows, page 475, Exhibit 2:

I am interested personally as a citizen in having pure food sold in the community, and am interested as a business man in seeing that my business is protected.

Mr. Adolphus Busch, a brewer of St. Louis, testified as follows, page 492, Exhibit 2:

The CHAIRMAN. Malt, hops, and water make the best beer?

A. Yes; make the finest beer and the finest beer only.

The CHAIRMAN. And that a minimum standard of beer would not be oppressive against the honest brewer?

A. No; not at all.

The CHAIRMAN. And that such a standard would do no harm to the man who intends to give a fair article of beer and would be a benefit to the consumer?

A. Yes.

The CHAIRMAN. So that the consumer gets what he asks for?

A. Yes. The main thing is that the articles that should enter into the brews should be mentioned. I am not opposed to corn, only I say that corn does not make a high-grade beer.

Mr. C. A. Wieting, commissioner of agriculture for the State of New York, testified as follows, page 494, Exhibit 2:

Permit me to congratulate you, Mr. Chairman, on the position you have taken as to the question of standards for foods and drinks.

This congratulation was sent in connection with the following quotations from Senator Mason, page 494, Exhibit 2:

Our investigations up to date have disclosed a remarkable state of affairs. The United States is the only civilized country in the world which does not set a certain standard on its food products. By setting a high standard, we would not only protect the honest producer and consumer, but also increase our exports, for people have faith in our Government; and if they know that the food is inspected and there is plainly marked on each article exactly what it is composed of, they are more ready to purchase it.

Mr. Hildreth, president of the Urbana Wine Company, of New York, testified as follows, Exhibit 2, page 513:

If we could get some general law on the statute books of the United States obliging people who manufacture carbonated wines or who bring wines into this country or who sell American wines under foreign labels to sell their products for what they actually are, I believe that individual State legislation would very soon follow the national law and that the States would enact local State laws to correspond.

Mr. Cook, president of the American Wine Company, of St. Louis, Mo., manufacturing Cook's Imperial Wine, testified as follows, Exhibit 2, page 520:

The CHAIRMAN. You are willing to market your goods and mark them for just what they contain?

A. Yes. We do mark them now in that way.

The CHAIRMAN. Do you favor a law which would compel your competitors who make an artificial wine to mark theirs in the same way; that is, to mark them for what they contain?

A. Yes. I think it would be a very beneficial thing for the public and also beneficial to the general manufacturers of sparkling wines.

Mr. Hildreth, president of the Urbana Wine Company, New York, testified as follows, Exhibit 2, page 524:

As to the question of individual State laws, as I said in my evidence, I think that a general national law would have more weight with the individual legislatures of the States and would tend to make those legislatures enact laws corresponding with the national law. If there is a national law governing interstate commerce the individual States will almost certainly copy those laws to a greater or less extent, and I think that is where the public and manufacturer will gain.

Dr. William Frear, chemist and vice-director of the agricultural experiment station of Pennsylvania and chemist for the food and dairy commission of that State, said, page 530, Exhibit 2:

Owing to those difficulties and to the need of some widely recognized pattern upon which legal regulations and local standards might be based, it is clear that a national law governing the commerce between the States would prove a most valuable supplement to the existing State legislation on the same subject permitting the relief under proper guaranty of the retailer from existing injustice, the control of sales in original package, promoting the general unification of food-control legislation, and the execution of State laws. The Association of State Dairy and Food Commissioners, which met in October, 1899, in Chicago, passed a resolution urging the enactment of the measure advocated by the National Pure Food and Drug Congress as best adapted to secure these desired ends without in any way interfering with that police control of commerce that is entirely within the confines of the several States.

Prof. J. W. Mallet, professor of chemistry in the University of Virginia, testified as follows, page 556, Exhibit 2:

It has always seemed to me that in such cases the consumer, the purchaser, is entitled to know what he buys. There may be nothing unwholesome in the addition or

substitution, but it constitutes a fraud unless known to the consumer. There has been an immense amount of discussion about oleomargarine. It is a good and wholesome food, and in some cases, as of long sea voyages, it is used preferably to butter. But still it should not be called butter or sold as such. There was an outcry some years ago about glucose made from starch. Glucose is harmless in itself, and in fact ordinary cane sugar if taken into the stomach is converted into glucose—into two kinds of glucose—by the action of the digestive fluid. But if a man sells glucose as cane-sugar molasses—

The CHAIRMAN. Or if he sells glucose for honey or for maple sirup.

Professor MALLET. Yes. That is a fraud.

The CHAIRMAN. You believe that it would be good ethics to say to a manufacturer that he must mark his goods for what they are?

Professor MALLET. Yes.

The CHAIRMAN. And not sell glucose for honey, or oleomargarine for butter?

Professor MALLET. Precisely.

Altogether, 197 witnesses were examined by the Senate Committee on Manufactures, and of this number all but two or three expressed themselves as unequivocally opposed to fraudulent adulteration, and all who were asked as in favor of a national pure food law controlling both substances injurious to health and frauds of all description. In only one instance was the witness vigorously opposed to legislation controlling foods. This witness was William Broadwell, of 193 West Madison street, Chicago, who assailed all food laws of all kinds, because they interfered with his practice of selling oleomargarine for butter. These witnesses represented every type of interested parties, even the agricultural producer. This practically unanimous consensus of opinion ought not to be ignored by this committee. It shows the necessity for national legislation; the influence it will have on State laws; its utility in establishing standards; its function in securing uniform procedure in the courts; its tendency to protect the retail dealer from petty prosecutions which sometimes develop into persecutions, and its general stimulating effect upon the morale of trade.

If such an emasculated bill becomes a law, it will be used by the parties here representing it as a weapon to compel the repeal of all State statutes regulating traffic in adulterated foods, and the enactment of laws similar in every respect to the one proposed. The high authority of this committee will be cited in every State legislature to secure repeal of obnoxious laws. It is a logical sequence that legislation which is improper for the Congress is unwise for the State legislature. One by one the bulwarks which the States have erected against dishonest and fraudulent commerce in foods will be beaten down, until at last adulteration, fraud, sophistication, and deception will run riot through all the land.

Mr. Grosvenor showed that at least nineteen States had laws defining adulterated food in language almost exactly like that in bill No. 3109, and he and all the advocates of bill No. 12348 have resolutely set their faces against all such legislation. Can we doubt for a moment that if they are able to get such legislation through the Congress they will not be equally successful through all the States?

The work of the advocates of pure food, extending now over more than a quarter of a century, will be undone and the 76,000,000 consumers of foods in this country be left to the mercy of the mixer, the compounder, and the preserver. We ought not even to be threatened with such a disaster, much less be boastfully told that it is imminent.

We have been told that the taste of the consumer himself will regulate the adulteration of foods, and that he will reject those that are

not pure. "You can sell him one can of fraudulent goods," we are told, "but he will not buy another." This is fallacious reasoning, and the premises are not well grounded. In point of fact, the taste of the consumer is no certain guide, even if he is an expert. Oleomargarine has been palmed off more than once on a butter expert. I doubt if there are three men on the committee who can tell oleomargarine from butter by the taste, texture, or smell. I have been for twenty years engaged in examining butter and oleomargarine, and I can not tell them apart except by chemical and physical tests.

The same may be said of honey. I doubt if any man in the world has analyzed more samples of honey and alleged honey than I have. I can not tell the true from the false article by taste, unless the degree of adulteration is more than 20 per cent. Which one of you can tell if a small amount of roasted cereals or chicory has been added to the coffee you drink at breakfast? Who can tell by the taste of a glass of beer if it has been brewed with 25 per cent of grape sugar? What man in this room can tell if a pickle has been hardened with alum before it is put in the vinegar? Is there any way a consumer can detect a jelly made in some small part with glucose, artificial coloring matter, and aromatic essence? No! The consumer is powerless and helpless before the shrewd and designing fabricator of adulterated articles.

But suppose it were true, as alleged, that the consumer would protect himself against the frauds in foods. Would he not equally protect himself against the deleterious substances therein? If a food made him ill, would he not refuse to buy it? If it killed him, commerce in that article would be at an end in so far as that poor man was concerned.

There is no possible way of separating the argument for and the objections against the two purposes for which food legislation is enacted. It is either necessary to protect all parties against frauds and poisons, or else it is not necessary for either purpose. No refinement of logic, no agile distortion of conditions, no appeal to popular prejudice, no personal nor epistolary nor telegraphic solicitants can get us away from this patent fact. Fraud and poison go hand in hand. They will rise or fall together. One criminal can not be excused by exciting a mob against his accomplice. These two great evils have made giant strides in the last twenty-five years. The efforts of the States have been feeble because paralyzed by lack of national supplement. As Senator Mason truly says, we are the only civilized country that has failed to make an effort to suppress these evils. Let us hope that this reproach will not long be deserved.

There was one erroneous impression made by Mr. Grosvenor—I am sure unwittingly—which I am certain he will be glad to have me correct. He stated that the Brosius bill was approved by a bare majority of the Pure Food and Drug Congress, and implied that the Babcock bill, which was framed by a minority of that congress, was similar in its provisions to No. 12348. On the contrary, the Babcock bill contained all the features of the Brosius bill to which he now so strenuously objects. In all the discussions which have taken place in the Pure Food Congress no one has ever even suggested a bill similar to No. 12348. The Babcock bill, which Mr. Grosvenor, Mr. Scherer, and other retail grocers so enthusiastically supported, provides for the regulation of traffic in fraudulent goods, and prescribes punishment therefor. It

differed in principle only from the Brosius bill in being crudely and hastily drawn, evidently by one person, and providing for a food and dairy commission and chemists and chemical laboratories other than those already existing in the Department of Agriculture. In this respect, and this respect only, it is like No. 12348.

The majority of the Pure Food Congress decided that it would be more economical and secure greater efficiency to confide the administrative features of the bill to means already existing in the Department of Agriculture and to those who had made food adulteration a special study. With this view this committee fully coincided. But not a voice was raised in that congress by Mr. Grosvenor nor anyone else, to confine the operation of any proposed law alone to substances deleterious to health. No board of health anywhere in the United States has proposed such a modification. No assembly of physicians has demanded it. No professors of hygiene and physiology have asked for it. Suddenly the manufacturers and distributers of food have, through their legislative committee, discovered that the only legitimate object of food legislation is the preservation of the public health. One would have thought that this discovery would have come from a congress of hygienists.

In explanation of this change of front, Mr. Scherer cites the tribulations he has experienced from the Illinois pure food commissioner. He helped to put that law on the statute books and now he appeals to Congress to help extricate him from the troubles he has brought on himself. He explains these troubles to this committee. They consist in placing a label on every package of adulterated food he sells. He doesn't object to putting one ticket on the barrel, but it is a piteous burden to put it on the jug which the laboring man carries home in exchange for his hard day's work. Some relief ought to be provided from this petty persecution of the Illinois law, but it is hard to see how the Congress of the United States can interfere in the matter. Congress might pass a law detailing an inspector to attend at each store whose sole duty it should be to stick labels and wrap up packages for delivery.

I am sure the Illinois commissioner does not willfully annoy any retail grocer in the State. I do know that he has tried to be just and right in his decisions, but he may not be an expert in foods and food adulterations. I have the highest opinion of the dairy and food commissioners of the various States. They, as a rule, are men of learning, experience, and excellent judgment. Unfortunately, they are not, as a rule, men who have had professional training in food analysis, physiology, and hygiene. Among my personal acquaintance, I know only two men in charge of State food laws who have had such training. The fault often lies there instead of in the law. I am sure that none of the laws in existence or proposed is perfect. I am sure there are many provisions of the bill No. 3109 which can be greatly improved. This bill was once in your hands and was greatly perfected before you offered it to the House. But it does seem to me that it is almost infinitely better than the proposed substitute No. 12348 which you are asked to accept in its stead.

Another argument which has been brought before the committee is that legislation against fraudulent foods is class legislation, while if directed against foods injurious to health it would not be. I am free to admit that class legislation is often wrong in principle and repug-

nant to that even and exact equality which all persons and all things should have before the law. But I fail to see, assuming that this principle should obtain in this case, how one form of legislation directed against frauds in foods is any more obnoxious to this charge than the same form directed against deleterious substances in food.

There are many articles of merchandise that are dangerous to health. Paints are nearly all poisonous, and the instances of sickness and even death produced by them are very numerous. Children's toys are very generally painted with injurious substances. Dyes, which are forms of paints, are equally dangerous. Wall papers often contain arsenic and poisonous aniline colors as pigments. A little over a year ago a Senator of the United States died of poison imparted to an abraded toe by the dyestuff in his stockings. Wood alcohol, a very common article of commerce, is a deadly poison. Acetone is very prejudicial to health. Rough on rats has killed its hundreds. All kinds of insecticides are deadly poisons. If the argument against class legislation is a valid one, then legislation affecting only the deleterious matters in foods is just as much class legislation as that intended to control frauds. The opponents of the Hepburn bill are indeed driven to desperate straits when forced to employ such a diaphanous subterfuge.

But, aside from this, I do not think that any fair-minded person will believe that a broad and absolutely general measure, relating to foods, discriminating against no article, simple or compound, giving no advantage to this, laying no embargo on that, can by any stretch of construction or interpretation be considered as class legislation. Foods are not a class. They are the whole thing. Would a law be regarded as class legislation because it referred only to human beings and did not apply to dogs? In the Hepburn bill every substance used as food, drink, or condiment, and every substance added to a food product, are placed exactly on the same footing. It would take a more delicate discrimination than the average citizen is endowed with to detect any class legislation in a law of that kind.

Another objection to the Hepburn bill, which has been made by the retail grocers who have appeared before the committee is the guaranty clause which holds the dealer guiltless who safeguards his own interests by taking the precaution to show where the adulterated articles were purchased. This guaranty clause was put into the bill by the earnest, continued, and untiring efforts of the retail grocers in the last Pure Food Congress. It was fought tooth and nail by the manufacturers and wholesalers, but it seemed so reasonable, so fair, and so just, that it won the day. In mythology we learn that Saturn was the only god who devoured his own offspring, and now in these latter days come the retail grocers as his followers in this latest exhibition of geneaphagy.

It has been urged against the execution of the State laws that nine innocent men are convicted to one guilty, but none of the State laws have this guaranty clause and none could extend it beyond the boundaries of the State. It seems no hardship, but only a wise precaution, to permit the dealer to avail himself of this safeguard. If he do not do so and is punished for violation of the law, he at least has deserved part of the punishment for criminal carelessness. If in the midst of an epidemic of smallpox a recalcitrant or negligent citizen failed to be vaccinated and should suffer from confluent smallpox, he would be guilty not only of bringing the disease on himself, but of becoming an addi-

tional nidus for the further dissemination of the disease. The presence of this guaranty clause in the bill will absolutely relieve the retail grocer from all the petty annoyances to which the State officials have subjected him.

Because orders are given by telephone or telegram seems no just reason for failing to secure the guaranty, unless it could be shown that the goods were delivered over the wire and not by the usual method of transportation. A guaranty does not appear to be more difficult to get than a bill of sale or lading. The almost tearful eloquence with which the hardship of getting a guaranty was portrayed has rendered this whole argument more positively ludicrous.

The reason given for the change of the first and second sections of the Mann bill into the corresponding sections of the Corliss bill was said to be the desire to place the administration of this bill under the Secretary of Agriculture, as is provided in the Hepburn bill. The Mann bill provided for an independent bureau. It is hard to see where the Department of Agriculture comes in in the Corliss bill. The control of the Secretary of Agriculture, as provided for in the Corliss bill, consists in the dignified act of approving of the appointment of one chemist at an annual salary of \$2,000. In all the history of legislation has ever before a cabinet officer been placed in such a humiliating position? A bureau is created in his Department over which he has absolutely no control. He can not appoint or discharge a single employee. He is permitted the high privilege of consenting to the appointment of one man.

Is this change from the original Mann bill intended for a joke, or is it meant to win support to a sadly battered proposition, by attracting through a meaningless phrase a support which the high character of the Secretary of Agriculture would lend? Has such a proposition ever been submitted to the Secretary of Agriculture? It would at least be courteous to the head of a great Department, when it was proposed to establish a new and important bureau, to ask him if he wanted it. I suggest that the promoters of this bill bring to this committee an expression of approval from the Secretary of Agriculture before asking you to approve it. They know the high character of the present occupant of that office. They know the esteem and confidence in which this whole nation holds him. They know his keen insight into men and affairs. They know how his hard common sense can detect between the genuine and the imitation. They know his abiding interest in the farmer whose products this bill is presumably to protect. If the measure they propose has merits superior to those of the Hepburn bill, James Wilson will be only too eager to accept and recommend it. At every step the bill of the Pure Food Congress has been submitted to him for his indorsement. The legislative committee of that congress submitted the completed bill to him for his approval before it was put into the hands of Mr. Brosius, and I can safely say that if you will convince him that this measure is what the farmers want, he will give it his unqualified approval.

It was stated to this committee that the legislative changes made in the Mann bill were the only ones of importance. I would like to call your attention to section 5 of the bill 9352, which provides "that the dairy and food commissioner shall keep a book or books which shall be a public record," but in bill No. 12348 these six important words are omitted. This is not an accidental omission, for in a hearing before

the Senate Committee on Manufactures, at 3 p. m., March 13, it was stated that these words were specifically omitted. So the books of the food commissioner are to belong to the star chamber. No one can know what his decisions are. Does this provision add to the esteem in which this bill is held by those desiring pure-food legislation? Neither the public nor the press nor interested parties shall ever see the reasons for approving or rejecting a formula, as provided for in section 4, lines 8, 9, 10, 11, and 12. What a flood of light may often be thrown on a dark subject through the crevice left by omitting six little words.

It has been claimed before this committee that competition is the effective remedy against food adulteration. But is this so? One of the elements of competition is to undersell your competitor. This can be accomplished by making the product at a less cost than he can. But experience has shown that the sole purpose of food adulteration is to lessen the cost and thus hold the market. It is perfectly evident that unrestricted competition tends to increase the evils of food adulteration instead of to lessen them. The fact that sometimes an adulterated article of food sells for less money is no condoning fact. The evils of fraud are not confined to money alone. They are far-reaching. They are demoralizing. They put a premium on deceit. They debase and impair the nutritive value of the food. They unbalance the ration. Ground shells in pepper clog the digestive canal. The absence of flavor dulls the action of the activity of the cells secreting the digestive ferments. No man can continually deceive his customer and retain that high moral sense which is the very soul of trade. The consumer may not be much out of pocket because of the cheapness of the articles purchased, but the manufacturers and dealers will soon be out of conscience.

It has been said here that a true label will kill trade and thus ruin the dealer. He will not be ruined any more than his competitors. People have to eat. They will eat just as much with a pure-food law as without. It is absurd to say the dealers will lose their markets if frauds in foods are made illegal. If every food in this whole country were labeled to show exactly what it is, there would be just as much commerce in pure foods as there is now in the adulterated articles, and who would supply this demand if not the retail grocers? It is self-evident that no trade would be lost.

Practically, under the present arrangement, every dealer has to handle adulterated articles. Under the new and better arrangement, he would handle only the pure article. Let me tell my friend, the retail dealer, not to worry over his inability to sell the public pure food. When the supply of the adulterated article is shut off and the public gets hungry, it will eat almost anything, even foods which are true to name, or "health foods," even.

THE WHOLESOMENESS OF FOODS ADULTERATED WITH WHOLESOME FOOD PRODUCTS.

It is claimed by many distinguished physiological authorities that the substitution of one wholesome food product for another which is asked for is itself a sanitary fraud, that is, an offense against the health. If all experts would agree in this opinion, then a bill regulating commerce in adulterated foods injurious to health would be

entirely sufficient to cover the whole ground. For instance, it is claimed in the case of a condiment, such as a pepper or spice, that it has an effect in stimulating the glands which secrete the ferments producing digestion, and this view is undoubtedly correct. It is used for this purpose. Nature has wisely provided that anything which is palatable excites the activity of the digestive organs, and spices and condiments of all kinds are used to give flavor to foods, and hence to increase the activity of digestion.

If, now, there be abstracted from a condiment a large portion of its substance, and that be supplemented with another substance, entirely wholesome in its nature, but without condimental properties, the effect of a given portion of this mixed substance in producing the desired result is diminished. The palate is not pleased and the digestion is not stimulated. Thus, such an adulteration is a sanitary offense.

This view is one which, I think, will be shared by every physiological chemist and expert in foods in the world, and yet it would be very difficult to convince a jury that the addition of starch to a condiment is the addition of a deleterious substance. The facts of the case remain indisputable, but to obtain a conviction before a jury would be almost if not quite impossible.

Again the tastes of men are as different as men are themselves. The idiosyncrasies of digestion are numberless. The wise physician does not prescribe an iron-clad diet for all of his patients, but he studies each one individually and finds those articles of food which are palatable, nutritious, and tolerable. There are doubtless many people who are seriously injured by eating glucose; there are many persons who can not take a glass of beer without making them ill; thousands of people have been poisoned by pure honey, that is, honey to which no substance had been added other than that placed there by the bees. Many stomachs do not bear starchy foods; others can not tolerate coffee or tea, and so on to the end of the list. But these are matters which everyone knows, without further consideration, can not be regulated by Congressional enactment; but what can be secured is that any food upon the market shall not sail under any false color so that when the physician prescribes a certain article for the use of his patient and that patient goes to the retail grocer and asks for it, he shall be able to get exactly what he demands.

In this connection I would like to quote, for the benefit of the committee, the testimony of one of the most distinguished physiologists and pharmaceutical chemists in the United States, and perhaps in the world. I refer to Prof. Albert B. Prescott, professor of pharmaceutical chemistry in the University of Michigan, a man of world-wide reputation and authority. He has been president of the American Pharmaceutical Association; he has been a member for many years of the committee which compiles the United States Pharmacopœia; he has been president of the American Association for the Advancement of Science; he is a member of learned societies in all parts of the world, and is universally known as a man of highest authority, unimpeachable character, and greatest ability. In testifying before the Senate Committee on Manufactures, Exhibit 2, page 197 et seq., he says:

Q. The distinguished doctor who was on the stand just before you testified as to the use of glucose. Have you any opinion as to whether that is necessarily a healthy food product or not?—A. Yes, sir; I have an opinion.

Q. What is it, Doctor?—A. Well, it is that glucose is a food by itself and, I think, deserving of recommendation and toleration as food. How far it is a wholesome food—I mean to say for how many individuals, how many persons it is a wholesome food—I can't say, and the public have had very little opportunity to judge, because the consumer does not know when he is obtaining glucose and when he is obtaining some other sugar, and I believe, if I may be permitted to express an opinion—

The CHAIRMAN. That is just what we want.

A. It is one which has perhaps become a hobby with me, that the substitution of one wholesome food for another, unknown to the consumer and the public, is a sanitary offense, for what is a wholesome food for one man is not a wholesome food for another man, and most of the members of the community whom I meet profess to have some experience as to what food is beneficial for their own digestion and what is unfavorable to their digestion, and if substitutions unknown to the consumer are permitted that experience goes for nothing and the public are discouraged in attempting to obtain experience.

Q. Then you hold that the substitution of what may be a pure food for some other pure food is not only fraud upon the public but is a sanitary offense?

A. I believe it to be a sanitary offense.

Q. As well as a moral offense?

A. I have said that it is difficult to find two stomachs that are alike, as difficult as it is to find two faces which will look alike, so that we could not distinguish one from the other. From the extreme complexity of the digestive process and the highly organized condition of the human body it becomes impossible, by chemical analysis, to say precisely what food would be most favorable to digestion and harmless for a given individual. People find out by experience. We hear men say every day, "I can't eat potatoes." We hear men say every day, "I can't eat this or that article of food." The witness who preceded me said that he had been greatly injured by malt liquor made from rice. That may be a universal experience, but it doesn't follow that is the universal experience because it was his experience, but it does follow that he should be protected in his undertaking to get malt liquor made from barley when that is his purpose.

THE DIFFICULTY OF SECURING ANY CONTROL UNDER A LAW REGULATING THE DELETERIOUS SUBSTANCES ONLY.

One of the weak points in the Corliss bill will be found in the difficulty of securing a conviction, under the terms of the proposed act, in any court. This bill not only declares that the food must contain a deleterious substance, but it must be sufficient in quantity to produce the deleterious effect in quantities used or intended to be used.

Let us examine, for a few moments, the real meaning, if there be any other than that of defeating purposes of legislation, in such a provision. The proposed law does not make any provision for ascertaining in the first place what substances are deleterious and in the second in what quantities they are so. Thus these two vital points must be determined in every instance and in every trial. It follows that this determination must apply only to the person purchasing and consuming the food, so there could be no general rule drawn in regard to such matters.

It is well known that there is scarcely any food substance that does not contain deleterious principles, provided that substance be used in inordinate quantities. The quantity of meat and potatoes consumed by a laboring man would kill a child. The amount of coffee drunk by one person would produce insensibility, paralysis, and even death in another. Thus it must be shown in every trial that the amount of food eaten by the person making the complaint contained a deleterious substance in sufficient quantities to produce illness. Suppose, for instance, that the court and the jury should find that 1 milligram of salicylic acid in a kilogram of catsup is injurious. Then it would have to be proved that it was injurious to somebody; in the next place that

the whole of it would have to be eaten at once, and in the third place that the quantity actually eaten was the quantity intended to be eaten; whereupon the maker of the catsup would come upon the stand and swear that he meant that only half a teaspoonful of the material should be eaten, and the prosecution would fail. There is no tribunal in the world that could set up any standard of any kind which would have any value for any purpose before a court trying a case under this provision of the Mann-Corliss retail grocer bill.

There is not a single alleged deleterious substance in foods, or added to foods, concerning which expert testimony can not be adduced before a court both to the effect that it is injurious and harmless. Thus, in every instance, the court would be compelled to listen to expert testimony on the side of the prosecution and on the side of the defense. Having no standard before him, he could not instruct the jury. All such cases would have to be decided either by public prejudice or preponderance of testimony, and it would be just as easy to secure preponderance of testimony on one side as on the other. It would depend upon which side could spend the most money and bring the most experts. As a rule, this side would be the side of the defense and not the side of the State. We, who have had some experience as experts, know how chary the State is and how liberal, sometimes, the defense is in its compensation of experts. It may be stated, then, as probable that in every case the preponderance of testimony would be on the side of the defense, and hence it would be impossible to secure a conviction.

Contrast this with the provisions of the Hepburn bill. This is a plain statement of facts which can be ascertained with absolute accuracy by the jury and the judge. It is not a question of opinion whether a substance is what it purports to be or not. It is a question of accurate chemical determination, which is capable of as much precision as a problem in mathematics or astronomy. It is true that in cases of very small or minute quantities of a substance the chemist may not be able to tell exactly the quantity present, but he can tell whether it is there or not, and thus whether the food is true to name. No other expert need be called. It is a question simply of fact, not of opinion, and hence it would be easy to secure a conviction.

On the other hand, under the provisions of the other bill there could never be a question of fact determined. It would be impossible, absolutely impossible, to determine a question of fact except in the case of the person eating the food, and that food could not be secured for analysis, and hence only opinion could be relied upon to guide both the court and the jury.

With all due deference to the gentlemen who propose this bill, I must say that they have fallen into the unenviable position of having, in the interests of pure food, proposed a measure which is absolutely impracticable, impossible of enforcement, and which would end in open license, under the authority of the United States, for traffic in all kinds of false, misbranded, and deleterious foods.

I want to call especial attention to what I consider one of the most serious objections to the Mann-Corliss bill. It is found in section 3, which provides "that any article of food or drink or any article or compound intended to become an ingredient in a composition or preparation for food or drink containing any substance or substances which are, in the quantity used or intended to be used, deleterious to health."

etc. Now let me call the attention of the committee for a few minutes to what this actually means. In the first place, "any article of food or drink." Now, I claim that under this bill it would be almost impossible to traffic in foods of any kind, and especially drinks of any kind.

I think that there is in almost every State of this Union a very general feeling that certain drinks are injurious to health. I believe that is the opinion also of a vast majority of physiological and hygienic experts and publicists of all kinds. I refer especially to alcoholic drinks. Now, it is well known that every one of these alcoholic drinks contains a substance which is a narcotic poison, and is not only injurious to health, but can easily produce death. Under the Corliss bill it would not be possible to ship a bottle of beer or a gallon of whisky or a bottle of wine from one State to another. If it could be enforced, and we may assume for the sake of argument that a law such as is proposed can be enforced, although I have pointed out the difficulties of enforcing it—but assuming that it could be enforced, it would produce an absolute paralysis in interstate commerce in wines, beers, brandies, whiskies, cordials, liqueurs, and every other beverage which contains alcohol. Now, I am one of those who believe that legislation in regard to foods and drinks should be confined exclusively to securing freedom from fraud and plain statement of constituents.

I have never been a believer in sumptuary laws by either the State or the National Government. I believe that every citizen should be absolutely free to choose his food and his drink and his clothing, irrespective of what his neighbor may think is proper for him, provided in doing this he offend no law and commit no nuisance. Personally, I am no believer in the principle of prohibition, as you may readily infer. I am just as much opposed to drunkenness as to prohibition, but I don't think the man who takes too much whisky and gets drunk should be punished for that act, but only for any offense against the law which he commits under the influence of the drug. If I were a judge I would never palliate a crime on the ground that the perpetrator was intoxicated.

But what would this law do? I don't think it would be difficult to convince any judge or jury that alcohol is injurious to health. Now the question as it remains is, is it injurious in the quantities used or intended to be used? Here is one case where it would not be very difficult to find illustration. Every physician can bring before the court cases in which it could be shown that alcohol had been prejudicial to health, and thus, if this law means anything at all, which I honestly believe it does not, but assuming it to be a meaningful law, is it not a logical sequence that it would prohibit all interstate commerce in every substance containing alcohol?

Again, take the case of coffee and tea. These substances contain a highly poisonous alkaloidal principle belonging to the same class as morphia and strychnia; not as deadly in its action by any means, but I say belonging to the same class of poisonous alkaloids. In every community the physicians can bring before the court numerous instances of people whose health had been not only injured, but almost ruined, by the use of tea and coffee. There is a form of dyspepsia which is produced, exclusively almost, by these articles. Now, again assuming that this law has a purpose and can be enforced, it would absolutely prohibit interstate commerce in coffee and tea just as it would in alcohol.

Take the case of apples. How many hundreds of instances could be brought before the court of people who had suffered from colic from eating apples—especially children. Now, if this law means anything, it means that traffic in apples is to be prohibited because they contain an injurious substance or substances producing in many cases fatal results.

This law, Mr. Chairman, is sumptuary legislation of the most pronounced type. It strikes at the very root of human liberty, which among other things, at least should provide that a man shall choose his own diet and not have it prescribed for him by law.

It has been said here that the Hepburn bill is objectionable because it goes too far in prescribing that foods shall be sold for just what they are. I should like to know, Mr. Chairman, why vigorous opposition should not be exercised against this bill on the same ground. It not only goes too far, but it interferes with the inalienable rights of trade; it obstructs the regular channels of commerce; it prohibits the citizen from using what food or drug he pleases. Legislation has no right to prescribe what food a man shall eat, nor in what form he shall eat it: whether it shall be white, or yellow, or green; whether it shall be a protein, or a fat, or a carbohydrate, or a mixture of all of these; whether it shall be a vegetable or an animal product. All that legislation has a right to do is to secure to the purchaser the article which he wants, and let him be the judge of what he shall eat, and how much he shall eat, and when and where he shall eat.

I have only given you a few instances of staple articles of food which contain injurious substances which would be subject to exclusion under this bill, if it should become a law. Many others could be added to the list, but these instances would not increase the effectiveness of the argument against such an unwise, such an unconstitutional, and such a prejudicial act. The act itself under its own title is a prohibition. It is "to prevent the transportation of deleterious foods and drinks." I do not believe that Congress has the constitutional authority nor the moral right to prevent the transportation of any kind of a food product which is true to name. The Hepburn bill doesn't prevent commerce in food products nor purport to prohibit it. It is a bill "for preventing the adulteration, misbranding, and imitation of foods, beverages, candies, drugs and condiments, and for regulating interstate commerce therein," not preventing it.

There is no kind of a food product for which a penalty for transportation is provided in the Hepburn bill which is plainly marked to show its real constituents. It contains no provision which prohibits the transportation of an article of food which contains an injurious substance as a part of its natural composition. It could not be used to prevent traffic in coffee, or tea, or wine, or whisky, or brandy. The poisonous ingredient which a food may contain must be added to it, not a part of its nature, and even then it does not prevent the transportation of such articles, even if they have added materials to them. It simply says they shall be liable to be proceeded against in a manner provided for by the bill and certain penalties enforced for traffic therein.

Personally, I have never gone so far as my associates in the pure-food congress and other movements relating to injurious substances in foods. I have always been of the opinion, and still am, personally, that it is entirely sufficient to place upon a food label the nature of any sub-

stance which has been added in the preparation of the food, and leave to the consumer himself and his physician the determination of whether or not that substance is injurious to him. In this view a majority of those associated with me disagree, and I of course can only yield to their superior judgment. I don't believe, Mr. Chairman, that any manufacturer of food products in the United States ever added to a product a substance that was poisonous for the sake of poisoning the people.

He may have used injurious substances as preservatives or coloring matters, but never as poisons. I further believe that if the commission provided for in the Hepburn bill should, after the utilization of all the highest physiological, chemical, hygienic, and business talent in the country, as provided for in that bill, issue an opinion that certain substances now used for foods are injurious, and that opinion was spread broadcast throughout this land, as it would be, every reputable manufacturer of food products in the United States would instantly stop the use of that body. In this case, it is seen that the whole traffic in substances containing added products injurious to health would be at once controlled without any further trouble. Such would not be the case, however, with imitations, mixtures, and blends where no amount of publicity would prevent the continuance of the fraud, until some provision was made whereby the added substance should be plainly marked.

Now it is well known to you, Mr. Chairman, and to the members of the committee, that the only substances added to food which can in any way be classed as deleterious or injurious are coloring matters and antiseptics. Now there are honest differences of opinion among chemists and hygienists in regard to the use of these bodies. Some of them maintain that they are unnecessary and therefore when used should be prohibited. Others claim that in many instances they are necessary, and therefore their use should be simply regulated. Personally, I incline to the latter view. Let me illustrate. Foods become very injurious to health by the process of fermentation known as decay. Especially is this true with animal foods, but it is also true to a less degree with vegetable fruits. Often these injurious and poisonous substances are developed by fermentation before the process of decay has gone far enough to inform the palate and the nostril of the extent of decomposition.

In other words, food products may by fermentation produce poisonous substances known as ptomaines without becoming offensive either to the smell or the taste. When these foods are eaten most disastrous results ensue. Hundreds of cases are on record of death produced by ptomaine poisons in food which was entirely palatable. Now in such cases, granting that an antiseptic may have some injurious effect, it is perfectly demonstrable that that injurious effect is far less than that produced by those products of fermentation, and in this instance the public health would be conserved by the addition of an antiseptic.

The argument for a coloring matter is not by any means so strong, but still it is an argument. Food is valuable for three reasons: first, by reason of its nutritive properties; second, by reason of its pleasant taste and aroma, and third, by reason of its appearance. All these matters must be considered in determining the value of food. Now we associate with foods all these properties. In the case of color, we are accustomed to gouge a food largely by its appearance. In fruits you

are attracted by the color. If a man should offer on the market cherries of a deep green tint, it would be hard for him to find customers; or if green peas in the hull were colored bright red they wouldn't find a purchaser. In the preservation of some of these bodies it is desirable, if it can be done without injury, to preserve the original color.

This is especially the case with green goods. I am not referring now to the spurious coin, nor even to spurious bills of any kind, whether passed at the country store or upon the Interstate Commerce Committee, but I refer to green peas and green beans and green spinach. Now the green color of these bodies, the natural green color, is due to the substance known as chlorophyll, one of the most important elements in the composition of plants. Chlorophyll is a coloring matter which is of a very transient nature. In the course of a very short time it becomes, or tends to become, oxidized and to change its tint.

This is most beautifully shown in the change which comes in our autumnal foliage. The exquisite greens of the springtime give way to the mellow yellow and the ornamental reds of autumn. In other words, chlorophyll changes into xanthophyll to produce the yellow, and into erythrophyll to produce the red. This same change tends to take place, though in a much less marked degree, in preserved vegetables. There are certain chemical substances, as is well known, which are called mordants in dyes. These are substances which have no color of their own, but serve to fix in the fiber the colors which are added.

Now, if these substances are added to the green vegetables when they are preserved they produce exactly the same effects that are found in the mordants in the dye houses. These substances may or may not have their own colors, but they do not act by reason of their coloring matters. Two of the most active mordants for the color of vegetables are sulphate of zinc and sulphate of copper. One is a white or colorless salt and the other is a blue salt when crystallized and white when dry.

These are both poisonous bodies, but the addition of them in small quantities to the goods when prepared preserves almost indefinitely the beautiful green color of their natural state. Now, I maintain that the addition of these bodies to preserve vegetables is not a crime, provided the label state plainly their presence. I have no fear, Mr. Chairman, in eating French peas with my lamb chops, and yet I know they contain either copper or zinc. I am not afraid of becoming copperplated, nor of having my stomach changed into a galvanic battery.

I wouldn't eat French peas every day in the year, because these bodies are poisonous largely by their accumulative effect. If you eat them once in a while there is no accumulation of the poison in the system, and hence no evil effects are produced, but if you eat them every day that is quite different. I think all that is necessary in this case is knowledge—to know that these bodies contain small quantities of poisonous matters, and not to be deceived in buying them. Otherwise, I think the whole matter can be left to the individual himself and the physician he consults. In other words, I would not be in favor of condemning such a substance as deleterious and poisonous and thus prohibiting interstate commerce therein, but would be entirely content if Congress should enact such legislation as would plainly

mark these goods for what they are, and leave the rest to the good sense and the good judgment of the American citizens.

Now, Mr. Chairman, are the members of "the 400" in New York and Chicago, for I suppose they have at least that many in the list out there, as consumers in favor of legislation by your committee, which would exclude from their tables some of the most desirable and delectable viands which now adorn them? Is it not sufficient that they could understand simply what they are eating and that they be not allowed to purchase poisonous or deleterious substances under a false impression? That seems to me all that is necessary, and that is all the Hepburn bill, if administered by the Secretary of Agriculture, will do. Compare such a wise provision, so mild in its statements, so broad in its scope, so generous in its character with the absolute prohibition which would be secured by the passage of such a drastic measure as that proposed in the Mann-Corliss bill.

By far the most objectionable part of the Corliss bill is section 4, which provides for entering a formula approved by the food commissioner upon the secret books of his office, and that any article of food subject to the provisions of the bill shall be exempt when prepared in accordance with said formula. In the first place it is difficult to see how anyone could determine whether any given sample was compounded according to a formula which is unknown and inaccessible. In addition to this, the provision places in the hands of a food commissioner a dangerous and powerful weapon, which could be easily used according to the pique, or misjudgment, or prejudice of the commissioner against any manufacturer. It places in the hands of the food commissioner the absolute judgment in regard to what is deleterious to health. It does not even provide that the food commissioner shall be a chemist, a physiologist or a hygienist. If we can judge by what has been done in the various States, he will be none of these, but probably some one who has rendered an eminent party service.

The advocates of this measure have failed to point out to the committee any way by which a food commissioner under this section could reach just and equitable and reasonable decisions. But whatever decision he does reach is absolute and beyond the reach of criticism or censure. The evil effects of such a section are not difficult to see. A single illustration will show one of them. For instance, one of the Chicago firms manufacturing maple sirup will submit a formula for the approval of the food commissioner—such a formula as was described before this committee. The maple sirup in question will be composed of one part of maple sugar and three parts of glucose. The commissioner approves the formula, since it contains no matters prejudicial to health. The manufacturer is not required to submit any name to accompany his formula.

He can sell the product corresponding to this formula under any name he pleases and this product is guaranteed to be exempt from the action of the Federal law. When, therefore, he is arrested and tried in a State court for fraudulent selling as pure maple sirup or maple sirup a product which is not so, he at once shows that the United States law guarantees him from punishment for such a crime and appeals to the State authorities for the same privilege. In other words, he shows to the court that the United States is an accomplice before the fact and is engaged in legalizing unlimited frauds of this description.

Will not this condition of affairs be a realization of the prophecy and warning uttered by Senator Paddock in the Senate of the United States in March, 1892, when he said: "Take heed when the people demand bread that you continue not to give them a stone, lest the angry waves of popular discontent may sometime, perhaps in the near future, rise so high as to overwhelm and engulf forever all that we most greatly value, our free institutions and all the glories and hopes of our great Republic, which are not ours alone, but which belong—and if they are preserved and shall permanently endure will be an ever-continuing blessing—to all mankind."

This condition of affairs will also prove a most vivid realization of the condition described by Tennyson:

Villainy somewhere! whose? One says, we are villains all.

Not he: his honest fame should at least by me be maintained:

But that old man, now lord of the broad estate and the Hall,

Dropt off gorged from a scheme that had left us flaccid and drain'd.

Why do they prate of the blessings of Peace? we have made them a curse,

Pickpockets, each hand lustng for all that is not its own;

And lust of gain, in the spirit of Cain, is it better or worse

Than the heart of the citizen hissing in war on his own hearthstone?

But these are the days of advance, the works of the men of mind,

When who but a fool would have faith in a tradesman's ware or his word?

Is it peace or war? Civil war, as I think, and that of a kind

The viler, as underhand, not openly bearing the sword.

Sooner or later I too may passively take the print

Of the golden age—why not? I have neither hope nor trust;

May make my heart as a millstone, set my face as a flint,

Cheat and be cheated, and die: who knows? we are ashes and dust.

Peace sitting under her olive, and slurring the days gone by,

When the poor are hovell'd and hustled together, each sex, like swine,

When only the ledger lives, and when only not all men lie;

Peace in her vineyard—yes!—but a company forges the wine.

And the vitriol madness flushes up in the ruffian's head,

Till the filthy by-lane rings to the yell of the trampled wife,

And chalk and alum and plaster are sold to the poor for bread,

And the spirit of murder works in the very means of life,

And Sleep must lie down arm'd, for the villainous centre-bits

Grind on the wakeful ear in the hush of the moonless nights,

While another is cheating the sick of a few last gasps, as he sits

To pestle a poison'd poison behind his crimson lights.

THE CONSUMER AT FAULT.

It is evident from much of the testimony which you have heard that the dealers lay all their sins to the consumer. The consumer demands such and such an article and the poor retailer has to part with his conscience or lose his customer. The case cited by Mr. Scherer illustrates this point. There a prominent citizen had left a standing order that no glucose should be shipped to his house. When he complained of the goods delivered Mr. Scherer put a number of so-called sirups on a sheet of paper, among them some pure glucose, and asked the distinguished citizen to taste them. He liked none of them until he came to the glucose. That attracted his attention, and

he retasted it and then exclaimed in rapture, "That's the stuff I want." "But," says Mr. Scherer, "that's the glucose you're complaining of." "Is it?" he said in surprise. "Well, no matter; you send it up to the house; but for goodness sake don't tell madam."

It appears that after the lapse of some six thousand years they have learned in Peoria how to retaliate for the spurious apple jelly palmed off upon Adam in the Garden of Eden. No wonder the prominent citizen of Peoria didn't like the mixtures presented to him. They were the residues from sugar factories—in other words, the concentrated essence of all the impurities which raw sugar contains. By the process of refining, the pure sugar is freed from these impurities, and the residues are sold in the trade to color and flavor the mixed sirups of commerce. They have no right to masquerade as pure cane sirups.

Mr. Madden also called attention to the demands of the consumers for adulterated articles. Among others he cited peppers, which are so strong as to be unsuitable for use without dilution. Probably that is true in the case of peppers bought from his firm. If people have never had the opportunity of using a pure pepper or spice, they would very likely put so much of the pure article on if they had it that the food would be unpalatable. If, however, only pure spices and peppers were sold, the consumer would make no such mistake. I also call attention to the case of the maple sirup he mentioned, made from Quebec sugar. He says the maple flavor is so strong in this that if sold undiluted the people wouldn't use it; wouldn't know what it was. I am not surprised at this, if he refers to those consumers of maple sirup who have secured their goods from the sylvan groves of Reed, Murdoch & Co. I doubt if any customer of that firm ever tasted pure maple sirup in his life.

OPPRESSIVE WORKING OF STATE LAWS.

The gentleman who was called upon to open the discussion in opposition to the Hepburn and in favor of the Corliss bill before this committee was Hon. Elliot O. Grosvenor, ex-dairy and food commissioner of the State of Michigan. Since the administration of the food laws similar in their provisions to those of the Hepburn bill was made the chief basis of objection to the Hepburn bill, it might be well to see what Mr. Grosvenor's opinion is of these laws. In the seventh annual report of the dairy and food commissioner of Michigan, for the year ended June 30, 1900, Mr. Grosvenor says:

So far as results already obtained are to be considered, it may be safely said that the people of Michigan have been well repaid for their expenditure up to the present time in the almost total absence in the State of injurious adulterations, and in the largely restricted sale of commercial or fraudulent adulterations harmless in character.

* * * * *

No State in the Union can be said to be freer from injurious and noninjurious adulterations than is Michigan. No State has better food laws, and nowhere is the effort to enforce food laws more energetic, nor success more pronounced. A law aimed to prohibit the use of an injurious article of food is easily enforced, because none can be found who would dare defend the practice of offering for sale an injurious substance designed to be used as a human food. A law aimed to prevent fraud and deception in the sale of an article of food which has been depreciated through the addition of inferior or cheaper substances is more easily enforced than a law prohibiting the sale of oleomargarine for butter, for one reason and only one, viz, because the enforcement of a food law is not met with the same determined, organ-

ized, and combined opposition which is found in the prosecution of oleomargarine cases, and yet the two laws are quite similar. One decrees that a person shall not sell as butter something which is not butter and can be manufactured and sold for a less price, while the other seeks to prohibit a person from selling as pepper a combination of pepper shells, cocoanut shells, rice, and other substances, and which can be manufactured and sold much lower than the pure pepper.

In Michigan, at least, convictions under the food law for the sale of a grossly adulterated and inferior article of food result in 95 per cent of the cases brought, and a large per cent of these are disposed of without a contest. It follows that prosecutions under the food laws are more correctly brought for their deterrent effect upon others than for the punishment of the person charged.

The question has been asked, How long will it be necessary to maintain a department for the enforcement of food laws? The only logical answer is, just so long as human depravity, selfishness, and love of gain exist.

The organized governments of the United States with the means at their disposal are trying to prevent the sale of commercial deceits, while the manufacturers and inventors of these deceits are laboring just as energetically to present newer and more difficult of detection adulterations to take the place of the old. The official chemists of the United States are daily employed to differentiate the true and the false, and chemical research is busy in identifying what is from what is not. As fast as a method is established and a new adulteration is discovered, this same chemical research is employed by the dishonest manufacturer to produce some new deception; and so it is seen that we may only hope for pure foods in the fullest sense when man's innate ambition to outstrip his neighbor's bank account shall be merged in the millennium.

It is thus seen that Mr. Grosvenor has the very highest opinion of the State food laws which he and his collaborators, before this committee, denounced as unjust, onerous, and unnecessary.

In particular the case of Illinois should be cited, since most of the gentlemen who have appeared in opposition to the Hepburn bill were from that State. One of the most commonly repeated arguments which your committee has heard against the Hepburn bill is based on the alleged oppressive working of the State laws. Now, it is not quite fair to judge a law solely by the complaints of those who have suffered from its operations. I do not wish to make any invidious comparison, and disclaim any intention of doing so, but I doubt if you could go into a single penitentiary in this country and secure from the inmates an expression of approval of the laws whose operation had sent them there. John Trumbull in *McFingal* well expresses this idea in the following distich—

No man e'er felt the halter draw
With good opinion of the law.

But let us examine for a moment and see if the objections which have been made to the Illinois law have been well taken.

The first report of the food commissioner of the State of Illinois, issued in 1901, deals very fully with many of the matters which have been brought to the attention of this committee by the gentlemen from Chicago who were before you. Mr. Jones says:

The act went into effect July 1, 1899, but the penalties were suspended for the purpose of enabling dealers in food products to dispose of same without loss until the 1st day of July, 1900.

* * * * *

There was no specific provision made for the location of an office and laboratory. For various reasons it was decided not to place them in the capitol building. There was no available room which was large enough. A large part of the work would have to be done in the city of Chicago, as the greater number of the manufacturers of food products and about one-third of the retail dealers of the State were engaged in the business of manufacturing and retailing food products of the State there, Chicago being the central point for the food products of the State, and the greater number of

the violations of the law occurring there. And in order to have the office, laboratory, and evidence that might be found necessary to a conviction in each case of violation of the law where it could be obtained with the least expense, it was deemed expedient to locate the main office and laboratory in Chicago. A desirable place was found on the sixteenth floor of the Manhattan Building at a rental of \$1,000 per annum. The office and laboratory occupy seven rooms on that floor. The laboratory is well lighted and furnished.

It is seen from the above that even before the law went into effect the commissioner was conscious of the locality where most of the violations of the statutes would take place. Guided by this intuition, he decided to establish his laboratory in Chicago, where he could be near the seat of trouble.

The great burden of having stocks of unsalable goods on one's hands has been urged as one of the chief objections to a law regulating commerce in adulterated foods, but are the gentlemen from Chicago entitled to make a complaint of this kind? I think not; and my reason for so believing is found in the following quotation from Mr. Jones's report:

The penalties for violating this new law having been suspended until July 1, 1900, for the purpose of enabling the dealers in food products affected by the act to dispose of the same without loss, a conservative policy—a campaign of education—was mapped out and followed. It has been the department's aim to instruct the manufacturer, the wholesaler, the retailer, and the consumer as to what the law requires and demands of each of them and as to what goods may be sold and what may not be sold.

The department has also sent circulars to the trade embracing more especially the manufacturers, the wholesale and retail dealers of food products, as to what the law demands of them. In this way about 30,000 circulars have been mailed out.

It is seen from the above that not only was a whole year given for the dealers to dispose of goods which could not be offered for sale without violating the law, but every effort possible was made to inform them of the provisions of the law, as is seen in the following:

It was also deemed just and prudent, as far as possible, to give notice to those interested before beginning prosecutions for violations of the laws, and hence the inspectors were directed to canvass the stores and devote such time as might be necessary to placing these laws in the hands of the manufacturers and dealers, explaining the provisions of the laws, giving directions about labeling and stamping packages, displaying placards, and information required to be given when selling imitation products.

As soon as I was appointed as commissioner I put myself in communication with the Retail Grocers' Association of Illinois, and by arrangement delivered an address before the association at Rock Island at their last annual meeting, and went over the law, section by section, with them, and the rulings of the commissioner upon each section; and after a full and careful review of the law and its workings in relation to the retail dealers of the State, they expressed themselves as being in sympathy with the law. They said they believed in it, and proceeded to argue with reference to nearly everything that was affected by the law. The outcome of that meeting was that by a unanimous rising vote they agreed to stand by the law and uphold the commissioner, and a circular was issued to the trade containing information in reference to it; also copies of the law and rulings were furnished each member of the association. I also arranged meetings in the same way with different branches of the wholesale dealers in food products, and all these meetings seemed to be very satisfactory. And these different wholesale representatives were also furnished with copies of the law and rulings. They also agreed to stand by the law, and the traveling salesmen representing the wholesale dealers of the State were furnished with these laws and rulings containing information in reference to it, and they were carried everywhere by these traveling salesmen. I also delivered addresses before many of the different food associations of the State, and at all these meetings I have been assured that they were in sympathy with the law and the departments, and would not only observe the law but would uphold the hands of the commissioner and assist him in every way they could in its enforcement.

And as a result of these meetings the manufacturers and dealers in food products have submitted their labels and stamps for the different food products for inspection. The department has changed and corrected over five hundred of them so as to conform to the laws and rulings of the department.

It is thus seen that no dealer in the State of Illinois could have any just cause for complaint in having unsaleable goods left on his hands, or of being ignorant of the provisions of the law. What weight then can you give to the plea of innocence which they have set forth? This does not seem to me to be innocence, but willful ignorance. Mr. Jones further says:

These national meetings have been a great assistance to every State food commission and the production of good results, as in these meetings are discussed and the best means of educating the people up to the fact that adulteration of the food products destroys legitimate industry, fosters deception and fraud, lowers the moral standing, and weakens the credit of our people, and that this legislation in regard to pure food is in the interest of the people. No one is so rich that he does not require pure food, and certainly no one should be so poor that he should not be supplied with healthful nourishment. It is sought by the national association to secure, as nearly as possible, uniformity in the laws and rulings of the different States, and if this can be done then the question of labeling and stamping food products that are required to be labeled and stamped can be very much simplified. As it is now the manufacturer in Illinois has to prepare his labels for Illinois in conformity with the laws of Illinois, and for Ohio in conformity with the laws of Ohio, and so on for each State in the Union where said goods are to be sold; whereas, if a uniform law and rulings can be secured for every State, then one form of labels will answer for every State in the Union; and the same will be true as to goods that are to be stamped, branded, or placarded. If this can be done then the question of enforcing the State food laws is made simple. And there is no good reason why the same law on nearly if not all of these food products might not apply to every State in the Union.

I am inclined to think, from a careful study of Mr. Jones's report, that the allegations made against him of using harsh, unjust, and onerous measures to secure the enforcement of the food laws of Illinois are unfounded. For this reason it seems to me that all such objections as those referred to, which have been made to the Hepburn bill, are not worthy of serious consideration.

Perhaps the best argument that has been made in favor of the Hepburn bill was that presented by Mr. Madden, of Chicago, in opposing it in his illustrations of maple sirup and cotton-seed oil. His statements were honest, outspoken, and straightforward. He boldly claimed the right of the manufacturer and retailer to impose upon the consumer a spurious article under a genuine name. Why he drew the line at putting the brand of maple sirup on pure glucose was difficult to understand, for the logical sequence of his reasoning would stop at no such trifle. The reasons given by Mr. Madden for this deception were, first, that the public demanded it; second, that the exigencies of the trade required it. He said that staple goods whose properties were known were sold by the wholesalers and retailers at a loss, and gave as an illustration sugar. Therefore it was necessary that they should recoup themselves in some way, and the only way to do this was to sell to the consumer spurious articles at a profit large enough to cover the losses experienced in dealing in the genuine articles.

If this is the real state of trade, the sooner some amendment is made the better. I would be sorry to believe that it would be impossible for an American tradesman to make an honest profit out of an honest business, and yet this is the open statement of Mr. Madden, claiming to represent one of the largest wholesale and manufacturing establishments in the great city of Chicago.

Mr. Madden was not particularly happy in his further illustrations in regard to maple sirup. He stated that the farther north you went the higher the price of the maple goods, and that maple sirup produced in the Province of Quebec was worth 12 cents per pound in Chicago, while the same sugar produced in Ohio or Vermont was worth only 8 cents per pound. He followed this up with the remarkable statement that if a pure sirup be made by using the Quebec sugar it was so strong, black, and unpalatable that it could not be sold. The remarkable fact then remains that the higher-priced sugar was the poorer article. Hence, in the interest of his consumers, he was compelled to mix with this Quebec maple sirup some mild and harmless diluent which would reduce its flavor and modify its taste.

The same argument, however, could not hold with olive oils. These olive oils he said he imported. When asked if they were pure, he could not answer positively. In point of fact it has been shown by the investigations in the Department of Agriculture that a large percentage of the imported olive oils are adulterated, so it is fair to presume that a large proportion of the original olive oil employed in Mr. Madden's establishment is adulterated. This olive oil is mixed with cotton oil in varying proportions, and the whole is sold as olive oil. When he comes down to pure cotton oil, Mr. Madden's tender conscience again troubles him, and he does not mark that olive oil, but "salad oil."

Now, Mr. Madden's firm comes into direct competition with thousands of persons engaged in agriculture in the United States. He gave a series of statistics to the committee, showing the great numbers of men he employed—many hundreds in the aggregate—and argued from this that his business should have due consideration. There certainly is no objection to this kind of argument, provided the consideration is one which is proper to be given. In Mr. Madden's case the consideration asked was the condoning of a crime and participation in a deception. This is carrying consideration for an industry to an extreme. Now, where do the farmers live whose business is hurt by Mr. Madden's establishment? Hundreds of them live in the State of California, where the production of olive oil had grown to be an industry of great importance. A short time ago the Secretary of Agriculture received a letter from one of the largest producers of olive oil in California begging him to take some steps by means of which lower prices of adulterated oils could be kept from ruining his business—and, of course, the business of all others engaged in this great industry.

In the case of maple sirup, the farmers who are injured by Mr. Madden's spurious goods are numbered by the thousands. They live in the State of Ohio, in immense numbers in the State of New York, in still greater numbers in Vermont and in the New England States; and everyone of these men is robbed, actually robbed, of a part of the proper price for his goods. Every gallon of adulterated maple sirup which is sold is an unfair and illegal and a deceptive competition with the farmer who makes maple sirup. No one objects to fair competition, open and honest; but the competition which, like a thief in the night, seeks to deceive, to delude, and to destroy, is quite a different kind.

But the injury does not stop here. All kinds of mixtures of sirups are made, in direct competition with the pure article made from the sorghum and the sugar cane. Down in our Southern States is a great

industry devoted to the manufacture of sirups from sugar cane. Last autumn I made a tour of inspection of some of the areas where this industry is practiced. It has its greatest vogue in the States of Texas, Louisiana, southern Alabama, southern Mississippi, southern Georgia, southeastern South Carolina, and Florida. Thousands of small farmers in these States are engaged in this business, but when they seek for a market beyond the local one they are met with this fierce competition of a spurious article, and thus the prices of their goods are kept so low that the industry does not expand.

The Secretary of Agriculture has asked the House Committee on Agriculture to give him \$20,000 to investigate the conditions of this industry, to suggest means of making a more uniform article, the proper method of preserving it, and to study the frauds and deceptions with which it has to contend in the markets of the country.

I present here some samples of this pure article, made in the State of Georgia last November, which I guarantee to be absolutely pure. Made (most of it) with an old-fashioned mill driven by a mule, boiled in an open kettle, by lightwood, and bottled in a crude and primitive way, it is a product pure, palatable, and wholesome. Surely this great agricultural industry needs some protection from the frauds which would sell their sirups, under false labels, in direct competition with it.

I will venture to say, within the strict bounds of truthfulness, that the number of people in the United States engaged in the maple-sirup industry, the sorghum industry, and the sugar-cane-sirup industry is not less than one hundred times greater than those engaged in the establishment which Mr. Madden represents. I say one hundred times, but I have no doubt it is one thousand times greater. Are they not to be considered by this committee? Are the only persons worthy of consideration those who are engaged in a business which they proclaim openly is for the purpose of deceiving the consumer?

When asked why they do not label these sirups as made with the glucose, they frankly say, "Because we could not sell them." When questioned by the chairman of the committee in regard to this matter, Mr. Madden frankly confessed that the reason he opposed the Hepburn bill was because it would make such deception impossible. For this reason I say, as I said at the beginning, probably the best argument in favor of the Hepburn bill was made by Mr. Madden himself.

While on the subject of glucose, I would like to call attention to the fact that every witness who has appeared before this committee to favor the Mann-Corliss bill and oppose the Hepburn bill has been connected in some way with an industry which employs glucose, literally and practically, in a sirup-stitious manner. I have therefore the honor to present to this committee the real promoter and author of the Mann-Corliss bill [showing a bottle of glucose]. This is where the opposition to the Hepburn bill has started; this is its center, this is its origin and support. Shall this country make a god of glucose and call upon the whole people to fall down and worship? Is every principle of fairness, of honesty, and of justice to be sacrificed to this mammon of unrighteousness? How innocent it looks! How clear, how pure, how bright! And yet what a power it wields in this country!

Many years ago, when glucose was in disfavor, I came near losing my official position because I declared that it was a wholesome and

palatable food for most people. The bee keepers of the country denounced me in the most harsh, and, I think, outrageous manner, because I stated that this glucose could be put into artificial combs and sold as pure honey. In this particular form of the statement I probably made a mistake, although I made it on what I deemed good authority. What I should have said was that glucose could be made and sold as honey, and hundreds and thousands of barrels of it have been sold as such since that day. All the newspapers of the day were flooded with denunciations of "the Wiley lie." I have a large scrapbook which is filled with nothing but scathing and abusive articles, in which I play the part of the victim, and yet with respect to the use of glucose as honey I told only the simple truth.

In 1893, at the great convention of bee keepers held at Chicago during the World's Fair, I was invited before the body to make an address. I went into the "camp of my enemies" with fear and trembling. I restated my position, and gave them the *incontrovertible* facts in support of its soundness. At the end of the address the president of the association got up and advanced across the stage and offered me his hand, and said: "In the name of the bee keepers of this country, I wish to apologize for the abuse we have heaped upon you. We believe in you and in what you have done, and in the services you have rendered us. We want you to forget and to forgive." And now all that I have left of it is the scrapbook and the memory.

Shortly after that time I again took the unpopular side and declared that oleomargarine was a pure and wholesome food for those who like it. Then the butter men took the place of the bees. Newspaper and oral demands were made that I be removed from my position; that I was a disgrace to the profession. Bitter attacks were made against me in the newspapers. I was denounced on all sides as an imposter, an incapable, and an adulterator. But I have maintained this position and do maintain it to-day, and the butter makers will yet see the light and take the position which the bee keepers have already assumed.

And yet during all these years I have done what little I could to fight the fraudulent use of glucose and oleomargarine. To-day I have not changed my views. I think that both the glucose and oleomargarine are pure and wholesome foods for most people, in the general sense of that term. I believe their use *as such* should be unrestricted, untaxed, and unhampered; but I fear that I shall never reach that condition of moral obliquity under which I can be brought to view with indifference and even condonation their sale under other names and in imitation of other articles.

The principal arguments which have been made here in favor of glucose are its uses in honeys, sirups, and jellies. The question naturally arises, Is the addition of a glucose to a jelly an adulteration? I answer unhesitatingly, "*No, if the label is plainly marked, showing that the jelly contains this article.*" The term "jelly" is one which has entered into trade as the name of a distinctive product composed of fruit juices boiled with sugar; and hence the use of any other article than these, without a statement of the fact, must be considered an adulteration. I have here a cup of pure crab-apple jelly, absolutely without added color, and made of sound crab apples and granulated sugar. This is what the people of this country mean by the word "jelly." Now it has been confessed here that the jellies of commerce are sold for 2½ cents per pound; that they are made from the parings

and cores of apples obtained from desiccated fruit factories, together with glucose, coloring matter, and artificial flavoring.

I have been at these great factories, and I have noticed that not only the parings and the cores, but every decayed, rotten, and unfit apple goes into the same heap. Every worm-eaten spot of an apple—every worm itself which is found in the apple—is carefully collected into this same heap. We all admire economy in manufacture. We know that it has been said that there is nothing which has escaped utilization at a slaughterhouse except the squeal of the stuck pig. And so nothing escapes utilization at the fruit factory except the fragrance of the apple that is wafted into the ambient atmosphere. I certainly have no objection to the utilization of these apples for jelly making, nor have I any to their exportation to France, where they are used in large quantities in the wineries, especially in the manufacture of champagne. I do object, however, to the product which is made from this refuse, from glucose, with artificial color and artificial flavor, being brought into competition with an article like this [showing the pure jelly]. Granulated sugar is worth 5 cents per pound.

The quantity of pure crab-apple juice necessary to make a jelly of this kind is worth at least a few cents, and the cost of making is something, so that it seems quite certain that a pound of crab-apple jelly could not be made for less than 10 cents. And yet if a grocer wishes to sell a jelly of this kind he has to do it in competition with an imitation jelly, for that is the best that can be said of it. Mr. Madden testified that it could be made for 2½ cents per pound, and this too, you must remember, with the price of glucose high. I can recall, only a few years ago, when glucose like this which I show you was sold in Chicago at less than \$20 per ton. Since the price of Indian corn has gone up it is worth a good deal more than that; but I can assure you, gentlemen, that if with the present price of glucose this so-called jelly can be made for 2½ cents per pound, should glucose again fall to \$20 per ton, it could be made for 1½ cents per pound.

We are told that it is necessary to put glucose in jelly, for otherwise it would crystallize. Now, Mr. Chairman, I undertake to say that this is not the case. Cane sugar, when boiled with acid fruits, becomes inverted to a very large extent, and in this condition it will not crystallize. The trouble is that the stuff they boil the sugar with has very little fruit juice in it—so little that there is not enough acid to invert the sugar. The small quantity of real fruit which goes into modern "jelly" would not contain enough of malic acid to invert the sugar. This sample which I showed you, of pure crab-apple jelly, was made in August, 1901. I ask any of you gentlemen if you can see any signs of crystallization in this jelly at the present time?

I say it is a monstrous proposition to bring before this committee that such a product as this must come into open competition with such a product as that [showing sample of cheap jelly], made of apple cores, apple parings, glucose, a little sugar, aniline dye, and artificial essence. It is true these gentlemen have taken a whole week to try to convince this committee that this is not the case. It will take them a whole century to convince the people of this country that they are not engaged in fraudulent practices.

The question has been asked these gentlemen why it is that glucose has such a bad reputation. I think I can answer that, Mr. Chairman. It is because of the bad company in which it is so often found. The

people of this country know that glucose is used universally as an adulterant, and hence they despise it. I mean the people who read about such matters and understand them. But that does not give any excuse whatever for imposing upon those who do not take the trouble to look these matters up. Everybody can not be a chemist. We were told here by one gentleman that inspectors could go around in the stores and tell by looking at an object whether it was adulterated or not. Well, that may be so. The chemist can not. He has to make an analysis. And the consumer can not. He is fooled and deceived. He can not tell by the taste, because it has been testified that 95 per cent of these articles are imitations, and therefore he never has a chance to distinguish between the real and the imitation. The farmer whose wife makes his jelly at home gets a pure article; but should this wife attempt to make an honest penny by selling some of her home-made jelly, she is met by this ruinous competition, and she can not get as much for her jelly as the sugar costs. I am not surprised that no pure jelly is sold, because nobody could make it and sell it at the price of the imitation with which it must compete.

But I venture to say, Mr. Chairman, that if you make this Hepburn bill a law there is not one of you in this country who within a year will not be able to go into any grocery store and buy a genuine article of jelly. We are met with the objection then that you will have to pay more for it. Certainly you will. That is not the question. You haven't a chance to pay more for it now; you can get only the spurious article in most cases.

I do not want to prohibit the manufacture and sale of these cheap imitations of jelly, provided they contain no unwholesome ingredient; I do not want to put any tax on them; I want the consumer to please himself, and to be permitted to buy them if he chooses; but I surely do not want to see, in the interest of agriculture, which I try to represent, a man who makes from an agricultural product a genuine article forced to abandon his business because of the competition of the spurious and unmarked article.

One of the gentlemen who appeared before you, Mr. Madden, seemed anxious to discredit the ability of the chemist. No one claims any superior intelligence for the chemist, and his limitations are well known. There are many problems in both analysis and synthesis far beyond his reach, yet these facts do not in the least discredit the value of the things he can do. An instance given by Mr. Madden was cited of a near-by chemist who had reported glucose in a pure New Orleans molasses. It so happens that I have some information in regard to this matter which applies, I believe, to this very case. I lately received a letter from the Jordan Stabler Company, of Baltimore, dealers in staple and fancy groceries, which reads as follows:

Dr. H. W. WILEY, Chief Chemist,
United States Department of Agriculture, Washington, D. C.

DEAR SIR: Being very desirous of procuring absolutely pure food for sale in our business, and the writer having personally attended the sessions of the Pure Food Congress in Washington, listening with much interest to your paper on the subject of pure food, we take the liberty of writing you to know whether a chemist can ascertain by analysis what the glucose found in New Orleans molasses comes from. I have sent three or four samples of New Orleans molasses this season to Dr. Lehmann, of this city, our United States Government chemist, and he reports one sample contains glucose 21.30 per cent, polarization 41.71, while for another sample he reports polarization 34.10, glucose 23.99.

Our brokers of this city claim this molasses to have no mixture of commercial glucose. One of them claims that Dr. Lehmann knows nothing about it. I consider the latter assertion to be false and made to cover up the dishonest and outrageous custom of adulteration of goods to reduce original cost and give the unprincipled merchants and brokers a special profit. I like to expose such rascals as well as the thieves who mix it in New Orleans. Is it absolutely certain that the 21 or 23 per cent of glucose found in these samples of new crop New Orleans molasses all comes from the addition of commercial glucose made from the starch of corn and added to the natural drippings of cane sugar? Again, do the natural drippings of cane sugar show any glucose at all, or all sucrose? Dr. Lehmann seems to be a little in doubt himself, as he finds glucose in maple syrup, but we know that maple syrup is one of the most outrageously adulterated articles on the market in the United States, possibly not quite so bad as the strictly pure communion wine made from unfermented grape juice, loaded down with salicylic acid in nineteen cases out of twenty.

Very truly yours,

JORDAN STABLER CO.

It is evident from the above that the Jordan Stabler Company are not in sympathy with the movement to protect fraudulent practices. The following reply was sent:

JORDAN STABLER COMPANY,
705 Madison Ave., Baltimore, Md.

GENTLEMEN: I think that the trouble which you have in regard to the analyses made by Dr. Lehmann arises from the fact that he uses glucose in one sense of the word and you in another. Formerly among chemists it was very common to speak of the invert sugar in molasses as glucose, and that is doubtless the sense in which Dr. Lehmann uses it. The term glucose commercially, however, is now applied to the sugars made from starch. It is evident that Dr. Lehmann does not use the word in this sense. Reducing sugar, or invert sugar, is a natural constituent of New Orleans molasses and can not be regarded as an adulterant. The addition of commercial glucose, made from starch, to molasses can be easily detected by the polariscope, by the method of double polarization before and after inversion.

Pure maple syrup also contains reducing sugar, or invert sugar, but no commercial glucose. If this be present it is an adulteration. I quite agree with you about dosing unfermented grape juice with salicylic acid.

EFFECT OF PUBLICITY ON FOOD ADULTERATION.

It has been claimed that publicity from official sources and otherwise will prove a sufficient safeguard against the evils of food adulteration. I admit that publicity will do much to educate the consumer, and the adulterators of foods have uniformly admitted before this committee that if the public be educated and "get on to the game" food adulteration will be greatly hampered, if not entirely obliterated. It is, however, a matter of surprise how indifferent many people are to the character of the foods they consume. In the private family that may not be so, but in the boarding house, the restaurant, and the hotel is where the venders of adulterated goods find their most willing customers. I doubt if you can get in the finest hotel or restaurant in New York or in Washington a pure maple syrup for your breakfast pancakes. The purchaser in these cases are, it seems to me, sometimes in league with the food adulterator as if their interests were common.

Again, a very small percentage of our people read official articles on food adulteration. In the last twelve years the Department of Agriculture has published twelve bulletins on food adulteration, covering the subject almost completely. The greatest number of prints of any one bulletin has never been over 10,000, and most of them very much less than that. It is thus seen that a very small percentage of our people can be reached by publicity of this kind. In the case of a con-

viction in court, the facts of the case do not seem to show that the business of the convicted party is injured. Very few people in the first place know about it, and those who do hear of it give it very little attention. The newspapers, the magazines, and the lecture platform help to popularize knowledge relating to food adulteration, but even in these cases the great masses of the people are still unreached. As types of information of the kind illustrated above, I submit for publication in the record a copy of a lecture delivered at the Franklin Institute, Philadelphia, and one before the American Health Association at Minneapolis. (Exhibits 7 and 8.)

I have tried, Mr. Chairman, to show you the fallacy of every argument which can be made or has been made in favor of displacing the Hepburn with the Corliss bill. I have pointed out how the object which the Corliss bill purports to have in view is secured in every particular by the provisions of the Hepburn bill. There has been no denial of the real purpose of the Corliss bill, which is to defeat any legislation proposing to control fraudulent practices in the manufacture and distribution of foods. I believe it has been clearly shown that the very best arguments which could be offered in favor of the Hepburn bill have been those presented to this committee by the advocates of the other measure. I can not close this argument in any better way than by a brief extract from the speech of Senator Paddock in advocacy of his bill which passed the Senate in March, 1892:

In the name and in the interest of public morality, I appeal to you to set legislative bounds, beyond which the wicked may not go with impunity in this corrupt and corrupting work. Let us at least attempt to perform our part in the general effort to elevate the standard of commercial honesty which has been so disgracefully lowered by these deceptions, frauds, and robberies, the malign influence of which is everywhere felt.

Let us help by our action here to protect and sustain in his honorable vocation the honest producer, manufacturer, merchant, and trader, whose business is constantly menaced and often ruined by these unscrupulous competitors, who by their vile and dishonest arts, manipulations, and misbrandings are able to make the bad and impure appear to be the pure and the genuine; thus, by a double deception, both as to quality and price, making the worse appear the better choice to the unintelligent mass of purchasers.

In the interest of the great consuming public, particularly the poor, I beg of you to make an honest, earnest effort to enact this law. At best a great multitude of our people are oppressed by a fear, a never-absent apprehension, which they carry to their work by day and to their beds by night, that perhaps at the end of the following day, or week, or month their ends may fail to meet. Under the strain of this grim menace life itself becomes a burden almost too grievous to be borne. But the thought of helpless wife and children, whose sole dependence he is, renews the courage of the wage worker from day to day, and so he struggles on, praying and hoping to the end.

These, Mr. President, are the men, and these the women and children for whom, before all others, I make this appeal. If you could save to these the possible one-third to the nutritious element of their food supplies, which is extracted to be replaced by that which is only bulk, only the form and semblance of that of which they are robbed by the dishonest manipulator and trader, you would go a long way toward solving the great problem of the laboring masses, whether for them it is "better to live or not to live," whether it is "better to endure the ills they have rather than flee to those they know not of," that lie beyond in the realm of governmental and social upheaval and chaos.

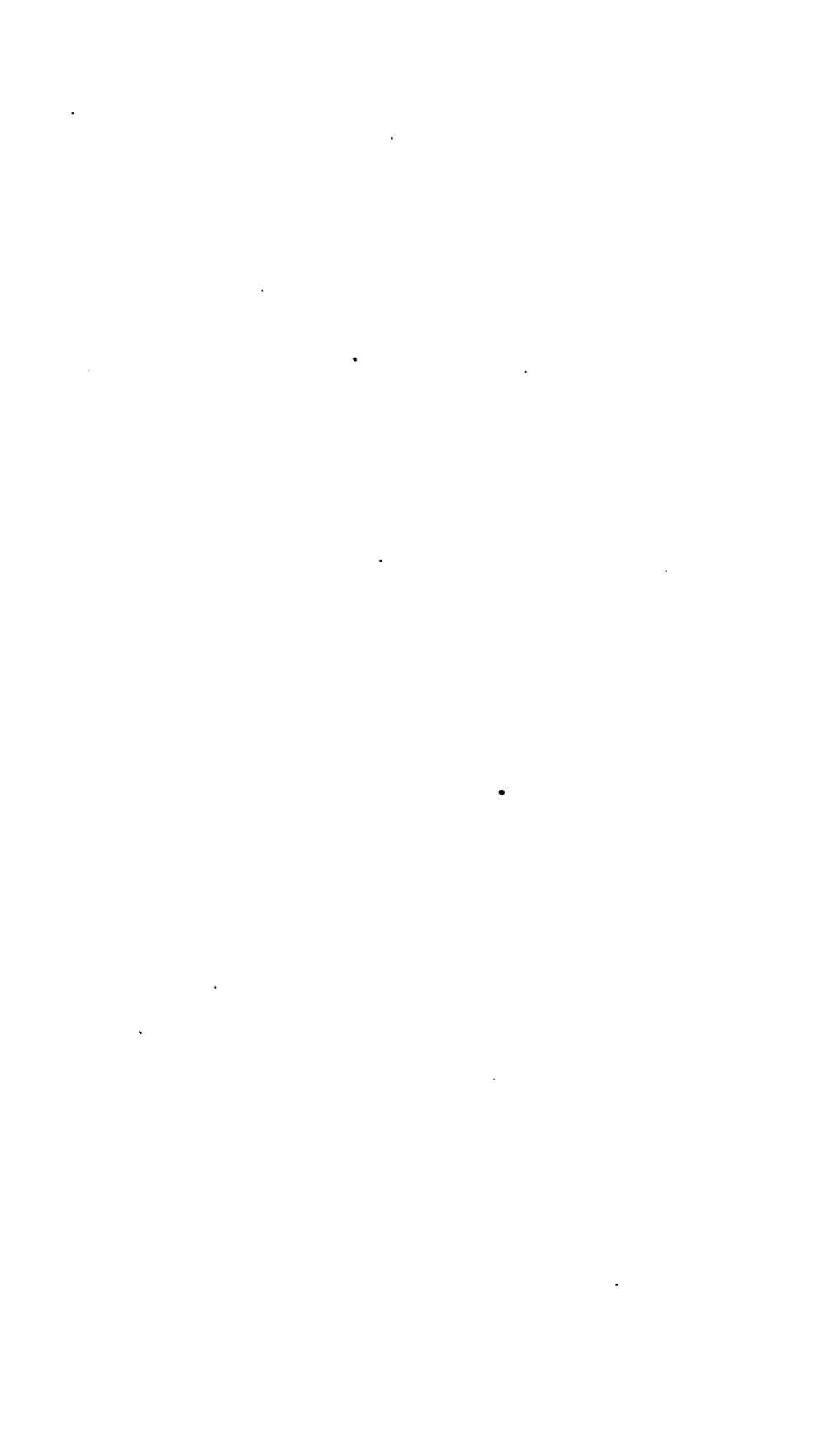


EXHIBIT NO. 1.

[Senate Document No. 181, 57th Congress, 1st session.]

ADULTERATION OF ARTICLES OF FOOD.

A TABULATED STATEMENT

PREPARED BY

THE AGRICULTURAL DEPARTMENT
(FOR THE SENATE COMMITTEE ON MANUFACTURES)

SHOWING

**THE ADULTERATION OF THE MOST COMMON ARTICLES OF
FOOD CONSUMED IN THE UNITED STATES.**

HEARINGS ON PURE-FOOD BILLS.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references.

MEAT PREPARATIONS.

Article.	Adulterant.	Extent of adulteration.		Reference.	Remarks.
		Number samples examined.	Number samples adulterated.		
Fresh meat.....	Preservatives.....	Rare		Bull. 18, pt. 10, Bureau of Chemistry, U. S. Dept. Agr.	Probably only used on meat exposed for sale by a few small dealers.
Cured meat.....	do.....	Frequent	8	do.....	Sold in cans. Added to chipped beef to preserve color.
Smoked meat.....	do.....				
Potted and deviled meat.....	Substitution of cheaper varieties of meat for that supposed to be present.	Frequent		do.....	
Do.....	Substitution of cheaper varieties of meat for that supposed to be present.			Conn. Agr. Exp. Station Report, 1888	
Pates and pâtés.....	Preservatives.....			Bull. 18, pt. 10, Bureau of Chemistry, U. S. Dept. Agr.	
Do.....	Boric acid.....	do.....		Conn. Agr. Exp. Station Report, 1888	
Sausage.....	do.....	19	14	Conn. Agr. Exp. Station Report, 1888	
Do.....	Excess of starch.....	do.....	25	Unpublished results of Bureau of Chemistry, U. S. Dept. Agr.	
Do.....	Preservatives.....		10		
Soup.....		Frequent	19		

DAIRY PRODUCTS.

Milk.....	Water or removal of fat.....	do.....	Ohio Dairy and Food Comm., Rept. 1899.....
Do.....	16 per cent.	do.....	Ohio Dairy and Food Comm., Rept. 1896.....
Do.....	do.....	do.....	San Francisco Board of Health, Rept. 1897-98.....
Do.....	do.....	do.....	New Jersey Dairy Comm., Rept. 1900.....
Do.....	do.....	do.....	New Jersey Dairy Comm., Rept. 1894.....
Do.....	do.....	do.....	Minnesota Dairy and Food Comm., Rept. 1901.....
Do.....	do.....	do.....	Conn. Exper. Station, Rept. 1897.....
Do.....	do.....	do.....	Conn. Exper. Station, Rept. 1896.....
Do.....	do.....	do.....	Ohio State Fair and Food Comm. Rept. 1898.....

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

DAIRY PRODUCTS—Continued.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Reference.	Remarks.
Milk	Water or removal of fat	49.8 per cent		Mass. State Board of Health, Rept. 1885.....	
Do	do	35 per cent		Mass. State Board of Health, Rept. 1896.....	
Do	do	31 per cent		Mass. State Board of Health, Rept. 1897.....	
Do	do	31 per cent		Mass. State Board of Health, Rept. 1898.....	
Do	do	27 per cent		Mass. State Board of Health, Rept. 1899.....	
Do	do	28 per cent		Mass. State Board of Health, Rept. 1900.....	
Do	do	Frequent		Wis. Dairy and Food Com'n, Rept. 1895-96.....	
Do	do	do		Mich. Dairy and Food Com'n, Rept. 1900.....	
Do	do	do		Rept. Milk Inspector Providence, R. I., 1890.....	
Do	do	do		Penn. Dept. Agric., 1900.....	
Do	Borax	11 per cent		Mass. State Board of Health, 1899.....	
Do	do	Rare		Ohio Dairy and Food Com'n, Rept. 1899.....	
Do	do	do		Ohio Dairy and Food Com'n, Rept. 1896.....	
Do	do	do		New Jersey Dairy and Food Com'n, Rept. 1896-97.....	
Do	do	do		Conn. Expt. Station, Rept. 1897.....	
Do	do	do		Mass. State Board of Health, 1900.....	
Do	do	do		Mass. State Board of Health, Rept. 1897.....	
Do	Formaldehyde	do		Mass. State Board of Health, Rept. 1899.....	
Do	do	do		Mass. State Board of Health, Rept. 1900.....	
Do	do	do		New Jersey Dairy Com'n, Rept. 1899.....	
Do	do	do		Penn. Dept. Agric., Rept. 1897.....	
Do	do	do		Mass. State Board of Health, Rept. 1899.....	
Do	Carbonate of soda, sodium bicarbonate	Rare		Mass. State Board of Health, Rept. 1899; Ohio Dairy and Food Com'n, Rept. 1899.....	
Do	Ultramarine	Rare		Penn. Dept. of Agric., Rept. 1897.....	
Do	Coloring matter	do	67	Bull. 13, Div. of Chem., U. S. Dept. Agric., 1897.....	
Butter	Oleomargarine	do	76	Mass. State Board of Health, Rept. 1900.....	
Do	do	do	178	Ohio Dairy and Food Com'n, Report 1899.....	
Do	do	do	171	Michigan Dairy and Food Com., Report 1900.....	
Do	do	do	32	Conn. Expt. Sta. Report No. 1900.....	
Do	do	do	32	Senate Report No. 1900.....	
Do	do	do	139	Conn. Expt. Sta. Report, 1897.....	
Do	do	do	11	North Carolina State Board of Agriculture, 1900.....	
Do	do	do	11	Conn. Expt. Sta. Report, 1890.....	
Do	do	do	11	Ohio Dairy and Food Com., Report 1898.....	

FATS AND OILS.

<u>Lard</u>	<u>Cotton-seed oil</u>	<u>Very extensive.</u>	<u>Ohio Dairy and Food Comm., Rept. 1896.</u>
Do.....	do.....	do.....	Conn. Exp. Station, Rept. 1900.....
Do.....	do.....	do.....	New Jersey Dairy and Food Comm., 1898.....
Do.....	do.....	do.....	Minnesota Dairy and Food Comm., 1901.....
Do.....	do.....	do.....	Bull. 18, pt. 4, Div. Chem. U. S. Dep't. Agric.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

FATS AND OILS—Continued.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Number samples adulterated.	Reference.	Remarks.
Lard.	Cotton-seed oil	Very extensive	Bull. N. Carolina State Bd. Agric., 1900			
Do.	do	do	Conn. Exper. Station, Rept. 1896			
Do.	do	do	Mass. State Board Health, 1899			
Do.	do	22 per cent	Ohio Dairy and Food Comm., Rept. 1895			
Do.	do	Very extensive	Conn. Exper. Station, Rept. 1900			
Do.	Beef stearin	do	Minnesota Dairy and Food Comm., 1901			
Do.	do	do	Bull. 18, pt. 4, Div. Chem., U. S. Dept. Agric.			
Do.	do	do	Bull. 18, pt. 4, Div. Chem., U. S. Dept. Agric.			
Do.	do	do	Conn. Exper. Station, Rept. 1896			
Olive oil	Cocoanut oil	Very frequent	Bull. 13, pt. 4, Div. of Chem., U. S. Dept. Agric.			
Do.	Cotton-seed oil	do	San Francisco Bd. of Health, Rept. 1897			
Do.	do	do	Conn. Exper. Station, Rept. 1897			
Do.	do	do	Bull. N. Carolina Bd. of Agric., 1900			
Do.	do	do	Mass. State Board of Health, Rept. 1900			
Do.	do	do	Conn. Exper. Station, Rept. 1900			
Do.	do	do	Senate report, 56th 1900			
Do.	do	do	Bull. 29, Cal. Exper. Station			
Do.	do	do	Ohio Dairy and Food Comm., Rept. 1899			
Olive oil	do	6 |	6 |	6 |	Oakland, Cal., Board of Health, Rept. 1899	
Do.	do	Very frequent	do	16 per cent	Unpublished records of the Bureau of Chemistry, U. S. Dept. of Agric.	
Do.	do	do	do	9 per cent	Unpublished records of the Bureau of Chemistry, U. S. Dept. of Agric.	
Do.	do	do	do	10 per cent	Unpublished records of the Bureau of Chemistry, U. S. Dept. of Agric.	
Do.	do	do	do	21 per cent	Unpublished records of the Bureau of Chemistry, U. S. Dept. of Agric.	
Other seed oils	do	In frequent	do	do	Conn. Exper. Station, Rept. 1900	
Corn oil	do	do	do	Rare	Mass. State Board of Health, Rept. 1900	
Sesame oil	do	do	do	do	Conn. Exper. Station, Rept. 1897	
Peanut oil	do	do	do	do	Conn. Exper. Station, Rept. 1900	
Mustard-seed oil	do	Infrequent	do	do	Unpublished records of the Bureau of Chemistry, U. S. Dept. of Agric.	
Poppy-seed oil	do	do	do	do	San Francisco Board of Health, Rept. 1897	
Do.	do	do	do	do	Ohio Dairy and Food Comm., Rept. 1899	

SACCHARINE FOODS.

Sugars (granulated and soft).....	None.	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.
Do.....	None.	
Molasses and sirups.....		
Glucose.....	9	Mass. State Board of Health 1890.
do.....	864	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.
do.....	167	Mass. State Board of Health, 1890.
do.....	6	Ohio Dairy and Food Comm., Report 1896.
do.....	17	Mich. Dairy and Food Comm., Report 1900.
do.....	6	do.
do.....	20	Report Mass. State Board of Health, 1890.
do.....	36	do.
do.....	12	Report Mass. State Board of Health, 1890.
do.....	1	Mass. State Board of Health Report, 1890.
Tin.....	91	Mass. State Board of Health Report, 1890.
Do.....		
do.....	17	Ohio Dairy and Food Comm., Report 1896.
do.....	807	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.
Maple sugar.....	5	do.
Do.....	0	Mass. State Board of Health Report 1890.
Maple syrup.....	18	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.
Do.....	63	Mich. Dairy and Food Comm., Report 1896.
Do.....	8	Ohio Dairy and Food Comm., Report 1899.
Do.....	24	Ohio Dairy and Food Comm., Report 1896.
Do.....	15	Ohio Dairy and Food Comm., Report 1896.
Do.....	15	Ohio Dairy and Food Comm., Report 1896.
Do.....	21	Ohio Dairy and Food Comm., Report 1896.
Do.....	13	Ohio Dairy and Food Comm., Report 1896.
Do.....	9	Ohio Dairy and Food Comm., Report 1896.
Do.....	8	Ohio Dairy and Food Comm., Report 1896.
Do.....	2	Ohio Dairy and Food Comm., Report 1896.
Do.....	8	Report Mass. State Board of Health, 1900.
Honey.....	82	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.
Do.....	400	Mass. State Board of Health, Report 1890.
Do.....	27	Ohio Dairy and Food Comm., Report 1898.
Do.....	1	Ohio Dairy and Food Comm., Report 1898.
Do.....	20	Mass. State Board of Health, Report 1900.
Do.....	2	Tin, Dairy and Food Comm., Report 1900.
Do.....	6	Mich. Dairy and Food Comm., Report 1900.
Do.....	88	Minn. Dairy and Food Comm., Report 1900.
Do.....	22	do.
Do.....	9	do.
Do.....	21	do.
Do.....	11	do.
Do.....	68	Minn. Dairy and Food Comm., Report 1900.
Do.....	15	Bull. 13, pt. 6, Div. of Chemistry, U. S. Dept. Agr.

*Glucose or cane sugar.

Since the publication of this report sugars have been placed on the market consisting of cane sugar and anhydrous dextrose; also mixtures of cane sugar, dextrose, and saccharine.

Tin chlorid is frequently used as a wash for brown sugars in order to improve the color of the sugar, hence the presence of this material in the syrups and molasses.

HEARINGS ON PURE-FOOD BILLS.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

SACCHARINE FOODS—Continued

CANNED VEGETABLES.

Peas.....	37	36	Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	Average content of copper in 38 sam- ples 63 milligrams per kilo. French peas are almost universally colored with copper salts to give them the natural green color.
Do.....	98	86	New Jersey Dairy Comm., Report 1895.....	
Do.....	11	8	Ohio Dairy and Food Report, 1895-1899.....	
Do.....	43	29	Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	Average content of copper in 29 sam- ples was 19 milligrams per kilo; 19 samples contained less than 20 milligrams per kilo.
Do.....	Preservatives.....	81	Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	Not added as an adulterant, but dis- solved from the can by the liquid contents.
Do.....	Tin.....	36	Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	Source is the solder used in soldering and in manufacture of cans; not added as an adulterant.
Do.....	Lead.....	Occasional in canned goods.....		Not added as an adulterant except in rice cases, where it may be used in place of copper for coloring vegeta- bles. Source usually the zinc chlorid used as a flux in soldering.
Do.....	Zinc.....	Frequent in canned goods.....		Frequently mature peas are put up after undergoing the process of soak- ing, and sold as fresh goods. These peas are such as are sold for seed or on the market as dried peas.
Do.....	Soaked or old goods.....			
String beans.....			Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	
Do.....	Copper (French origin).....	7	8	
Do.....	Copper (American origin)	20	*3	
Do.....	Preservatives (French)	7	7	
Do.....	Preservatives (American)	20	15	
Lima beans.....	do.....	10	8	
Do.....	Copper.....			
Do.....	Preservatives.....	15	10	
Do.....	Soaked old goods.....	8	5	
Corn (sweet).....			Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.	
Do.....	Preservatives.....	41	24	
Do.....	do.....	6	3	
Do.....	do.....	70	82	
Do.....	sulphites.....	6	2	
Do.....	do.....			
Do.....	do.....	70	12	
Do.....	do.....	11	11	

*Contained small amount of copper.

See remarks above for peas.

Sulphites or sulphurous acid are used
as a bleaching agent with foods
where white color is desired, as corn,
aspargus, mushrooms, etc.

HEARINGS ON PURE-FOOD BILLS.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

CANNED VEGETABLES—Continued.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Number samples adulterated.	Reference.	Remarks.
Corn (sweet)	Saccharin	Frequent.....	70	2	North Carolina Food Report for 1900.....	Used frequently in canned corn as a sweetening agent.
Do.....	Soaked corn.....	.....	86	7	"Bull. 18 pt. 8, Div. of Chemistry, U. S. Dept. Agr., North Carolina State Board of Agriculture Food Report for 1900.....	Matured corn is frequently used for cheaper grades; this is canned after having undergone a soaking process.
Tomatoes.....	Preservatives.....	10	55	.....	"Bull. 18 pt. 8, Div. of Chemistry, U. S. Dept. Agr., North Carolina State Board of Agriculture Food Report for 1900.....	Artificial coloring agents, notably eosin, are quite extensively used with tomatoes to improve their color and to cover up inferior material need as a basis for the product.
Do.....	Artificial coloring matter .....	.....	.....	.....	.....	Preservatives in large amounts are almost universally used in cansups.
Catupu.....	Preservatives.....	86	86	86	North Carolina State Board of Agriculture Food report 1900.....	Artificial coloring matter almost universally used in catupu to improve color and to disguise inferior mate-
Do.....	.....	48	49	49	Illinois Dairy and Food Report, 1899-1900.....	rial.
Do.....	.....	12	5	5	Minn. Dairy and Food Report, 1900.....	
Do.....	.....	56	46	46	Bull. 86, Kentucky Experiment Station.....	
Do.....	.....	42	36	36	Conn. Expt. Station, Report 1897.....	
Do.....	Artificial coloring	12	12	12	Minn. Dairy and Food Report, 1900	
Do.....	do.....	.....	48	48	Illinois Dairy and Food Report, 1899-1900	
Do.....	do.....	.....	86	86	North Carolina State Board of Agriculture Food Report, 1900.....	
Do.....	do.....	.....	56	56	Bull. 86, Kentucky Experiment Station.....	
Asparagus.....	Preservatives.....	9	9	7	North Carolina State Board of Agriculture Food Report for 1900.....	
Do.....	do.....	.....	18	11	Bull. 18, pt. 8, Div. of Chemistry, U. S. Dept. Agr.....	
Do.....	Sulphites.....	.....	.....	.....	.....	Sulphites are quite commonly employed with asparagus as a bleaching agent.

Preservatives are used in some extent with this class of goods. Sulphites are frequently used, especially where the goods are put up in glass, in order to bleach them. The principal form of adulteration, however, is the use of broken fragments and of stems and of diseased portions of the fruits. Most common form of adulteration of pickles is the process of coloring with copper salts. In general these goods are subjected to some such form of adulteration as has already been mentioned for vegetables. Preservatives find an extensive use and sulphites are used in some cases.

Mushrooms.....			
Pickles	Copper salts	North Carolina Food Report for 1900.....	Bull. 18, pt. 8, Div. of Chemistry, U.S. Dept. Agr.....
Artichokes, okra, sweet potatoes, maccoatah, Brussels sprouts, pumpkin and squash, celery, etc.	Do.....		

COCOA AND CHOCOLATE.

Cocoa and chocolate	Cereals	9	Bull. 18, Pt. 7 Div. of Chem., U.S. Dept. Agr.
Do.....	do.....	1	Unpublished records, Bureau of Chem.
Do.....	Wheat	6	Bull. 18, Pt. 7, Div. of Chem., U.S. Dept. Agr.
Do.....	do.....	1	Unpublished records, Bureau of Chem.
Do.....	Arrowroot	14	Bull. 18, Pt. 7 Div. of Chem., U.S. Dept. Agr.
Do.....	do.....	32	Unpublished records, Bureau of Chem.
Do.....	Corn	4	Bull. 18, Pt. 7 Div. of Chem., U.S. Dept. Agr.
Do.....	Rice	1	Bull. 18, Pt. 7, Div. of Chem., U.S. Dept. Agr.
Do.....	do.....	2	do.....
Do.....	Potato	1	do.....
Do.....	Excess of cocoa husks	47	Unpublished records, Bureau of Chem.
Do.....	do.....	30	Bull. 18, Pt. 7, Div. of Chem., U.S. Dept. Agr.
Do.....	Low-grade sugars	18	Unpublished records, Bureau of Chem.
Do.....	In sweet chocolate	9	Mass. State Board of Health, Report 1900....
Do.....	Iron oxide.....	12	Mass. State Board of Health Rpts. upon Food and Drug Inspection, 1900.
Do.....	All adulterants	61	Bull. 18, Pt. 7, Div. of Chem., U.S. Dept. Agr.
Do.....	do.....	14	Unpublished records, Bureau of Chem.

*In sweet chocolate.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

SPICES.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Number samples adulterated.	Reference.	Remarks.
{ Pepper	Starchy matter, etc.					
Do	Buckwheat (flour or flour)	102	14	14	Conn. Exp. Sta. Bull. No. 123	
Do	do	26	6	6	Ohio Dairy and Food Com., Rpt. 1896	
Do	Wheat	102	19	19	Conn. Exp. Sta. Bull. No. 123	
Do	do	68	17	17	Mich. Dairy and Food Com., Rpt. 1900	
Do	Wheat product	28	6	6	Ohio Dairy and Food Com., Rpt. 1896	
Do	Grain flour	102	4	4	Conn. Exp. Sta. Bull. No. 123	
Do	Rice	66	8	8	Mich. Dairy and Food Com., Rpt. 1900	
Do	Rice product	26	4	4	Ohio Dairy and Food Com., Rpt. 1896	
Do	Pea flour	26	4	4	Bull. 61, Div. of Chem., U. S. Dept. Agr.	
Do	Pea or bean shells	26	1	1	Ohio Dairy and Food Com., Rpt. 1896	
Do	do	11	0	0	Ohio Dairy and Food Com., Rpt. 1897	
Do	Corn meal	66	7	7	do	
Do	Sago	26	1	1	Ohio Dairy and Food Com., Rpt. 1896	
Do	Farnaceous matter	102	1	1	Conn. Exp. Sta. Bull. No. 123	
Do	Cocoon shell	102	17	17	do	
Do	do	26	6	6	Ohio Dairy and Food Com., Rpt. 1896	
Do	Cayenne	102	18	18	Conn. Exp. Sta. Bull. 123	
Do	do	26	8	8	Ohio Dairy and Food Com., Rpt. 1896	
Do	do	66	2	2	Ohio Dairy and Food Com., Rpt. 1897	
Do	do	415	28	28	Mass. State Board of Health, Rpt. 1900	
Do	Ginger, pepper, shells, and olive stones					
Do	Mustard hulls					
Do	Linseed meal					
Do	Red sandalwood					
Do	Foreign hulls					
Do	Sawdust					
Do	do	102	2	2	Conn. Exp. Sta. Bull. No. 123	
Do	Charred matter	102	2	2	Ohio Dairy and Food Com., Rpt. 1896	
Do	Sand in excess	66	13	13	Conn. Exp. Sta. Bull. No. 123	
Do	Turmeric	28	4	4	Mich. Dairy and Food Com., Rpt. 1900	
Do	Coloring matter	66	1	1	Ohio Dairy and Food Com., Rpt. 1896	
Do	Not specified	67	3	3	Ohio Dairy and Food Com., Rpt. 1898	
Do	do	14	7	7	Conn. Agr. Exp. Sta. 1898	
Do	All adulterants	102	10	10	Bull. 13, Pt. 2, Dir. of Com. U. S. Dept. Agr.	
Do	do	415	82	82	Conn. Exp. Sta. Bull. No. 123	
						Mass. State Board of Health, Rpt. 1900, upon food and drug inspection.

Sold in sealed and labeled packages.		
Do.....	do.....	24 Ohio Dairy and Food Comm., Rpt. 1895.
Do.....	do.....	87 Mich. Dairy and Food Comm., Rpt. 1900.
Allspice	Cocoonut shells	21 Conn. Exp. Sta. Report, 1888.....
Do.....	do.....	2 Mass. State Board of Health, Report 1900.
Do.....	Nut shell	2 Ohio Dairy and Food Comm., Report 1896.
Do.....	Ground shells	4 Conn. Exp. Sta. Report, 1886.....
Do.....	Clove stems	21 Mich. Dairy and Food Comm., Report 1900.
Do.....	do.....	23 Conn. Exp. Sta. Report, 1887.....
Do.....	Cloves	10 Conn. Exp. Sta. Report, 1887.....
Do.....	Nutmeg	28 Mich. Dairy and Food Comm., Report 1900.
Do.....	Nutmeg hulls	10 Bull. 51, Div. of Chemistry, U. S. Dept. Agric., Conn. Exp. Sta. Report, 1897.....
Do.....	Wheat	28 Mich. Dairy and Food Comm., Report 1900.
Do.....	Wheat product	10 Mich. Dairy and Food Comm., Report 1900.
Do.....	Corn meal	10 Conn. Exp. Sta., Report 1898.....
Do.....	Sandalwood	21 Mich. Dairy and Food Comm., Report 1897.
Do.....	Woody matter	7 Conn. Exp. Sta., Report 1898.....
Do.....	Ground husks	1 Conn. Exp. Sta., Report 1898.....
Do.....	All adulterants	5 Mass. State Board of Health, Report 1900.
Do.....	do.....	5 do.....
Do.....	do.....	11 Conn. Exp. Sta., Report 1897.....
Do.....	do.....	21 Conn. Exp. Sta., Report 1898.....
Do.....	Cocoonut shells	7 Conn. Exp. Sta., Report 1897.....
Do.....	do.....	20 Conn. Exp. Sta., Report 1898.....
Do.....	Wheat	7 Conn. Exp. Sta., Report 1897.....
Do.....	Wheat or starchy matter	2 Conn. Exp. Sta., Report 1898.....
Do.....	Allspice	2 Conn. Exp. Sta., Report 1897.....
Do.....	do.....	21 Conn. Exp. Sta., Report 1898.....
Do.....	Starchy matter	20 Conn. Exp. Sta., Report 1897.....
Do.....	Clove stems	3 Conn. Exp. Sta., Report 1898.....
Do.....	Redwood	1 Mass. State Board of Health, Report 1900.
Do.....	Clove stems, nut shells, starch, fruit stones, charcoal, turmeric, sweepings, Not specified	2 Bull. 13, pt. 2, Div. Chemistry, U. S. Dept. Agric., Ohio Dairy and Food Comm., Report 1895.
Do.....	Cocoonut shells	11 11 do.....
Do.....	Not specified	12 12 Mich. Dairy and Food Comm., Report 1897.
Do.....	do.....	18 14 Conn. Exp. Sta., 21st Ann. Report, 1897.....
Do.....	Woody matter	8 17 Mich. Dairy and Food Comm., Report 1900.
Do.....	All adulterants	8 17 Conn. Exp. Sta., 22d Ann. Report, 1898.....
Do.....	do.....	6 8 Mass. State Board of Health, Rpt. 1900.
Do.....	Foreign bark	198 2 Mich. Dairy and Food Comm., Rpt. 1900.
Do.....	Foreign woody material	25 2 Conn. Agric. Exper. Station, Rpt. 1897.
Do.....	Wood and red sandalwood	34 1 Ohio Dairy and Food Comm., Rpt. 1895.
Do.....	Woody fiber	16 10 Mich. Dairy and Food Comm., Rpt. 1900.
Do.....	Foreign starchy matter	26 10 Bull. 51, Div. Chem., U. S. Dept. Agric.
Do.....	Wheat flour	1 Wheat flour
Do.....	Wheat	34 8 Conn. Agric. Exper. Station, Rpt. 1897.
Do.....	Ground crackers	34 1 Bull. 51, Div. Chem., U. S. Dept. Agric.
Do.....	Wheat (probably biscuit)	84 2 Conn. Agric. Exper. Station, Rpt. 1897.
Do.....	Bread or crackers	16 1 Ohio Dairy and Food Comm., Rpt. 1895.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

SPICES—Continued.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Number samples adulterated.	Reference.	Remarks.
Cinnamon and cassia.						
Do.	Sago meal.	Bull. 51, Div. of Chem., U. S. Dept. Agric.				
Do.	Aarrowroot.	do				
Do.	Ground peas.	do				
Do.	Potato flour.	do				
Do.	Buckwheat.	94	1	8	Conn. Agric. Expt. Station, Rept. 1897	
Do.	Rice flour or hulls.	16	2	2	Ohio Dairy and Food Comm., Rept. 1896	
Do.	Ginger.	16	2	2	Conn. Agric. Expt. Station, Rept. 1898	
Do.	Turmeric.	16	2	2	Ohio Dairy and Food Comm., Rept. 1896	
Do.	Charcoal.	16	1	1	Conn. Agric. Expt. Station, Rept. 1897	
Do.	Sand.	84	8	8	Mich. Dairy and Food Comm., Rept. 1897	
Do.	Sand in excess.	26	4	4	Ohio Dairy and Food Comm., Rept. 1890	
Do.	Gypsum.	16	1	1	Bull. 51, Div. of Chem., U. S. Dept. Agric.	
Do.	Mineral matters.	do			Conn. Agric. Expt. Station, Rept. 1896	
Do.	All adulterants.	34	8	8	Conn. Agric. Expt. Station, Rept. 1897	
Do.	do.	26	14	14	Ohio Dairy and Food Comm., Rept. 1896	
Do.	do.	16	5	5	do	
Ginger.	Rice middlings.	91	20	20	Conn. Agric. Expt. Sta. Report 1896	
Do.	Rice hulls and rice flour.	4	1	1	Ohio Dairy and Food Comm. Report 1896	
Do.	Corn meal.	91	1	1	Conn. Agric. Expt. Sta. Report 1896	
Do.	Wheat.	91	2	2	Bull. 51, Div. Chemistry, U. S. Dept. Agr.	
Do.	Potato flour.	do			Conn. Agric. Expt. Station, Rept. 1898	
Do.	Mustard hulls.	91	1	1	Bull. 51, Div. of Chemistry, U. S. Dept. Agr.	
Do.	Cayenne.	91	1	1	Ohio Dairy and Food Comm., Report 1896	
Do.	do.	4	1	1	Bull. 51, Div. of Chemistry, U. S. Dept. Agr.	
Do.	Clove stems.	91	1	1	Conn. Agric. Expt. Station, Rept. 1896	
Do.	Sawdust.	91	1	1	Mich. Dairy and Food Comm., Report 1900	
Do.	Turneric.	91	1	1	Conn. Agric. Expt. Sta. Report 1890	
Do.	do.	4	8	8	Bull. 18, Pt. 2, Div. of Chemistry, U. S. Dept. Agr.	
Do.	Gypsum.	7	4	4	Ohio Dairy and Food Comm., Report 1890	
Do.	Not specified.	do			Conn. Agric. Expt. Sta. Report 1898	
Do.	do.	4	2	2	do	
Do.	All adulterants.	91	24	24	do	
Do.	do.	do			Some of the samples contained three kinds of adulterants.	
Do.	do.	do				
Do.	Cayenne.	284	11	11	Mass. State Board of Health, Report 1900.	
Do.	do.	4	8	8	Ohio Dairy and Food Comm., Report 1895	
Do.	do.	14	0	0	Conn. Agric. Expt. Sta. Report 1895.	

	Conn. Agr. Exp. Sta., Report 1897		
Do.....	2	do	1 Conn. State Board of Health, Report 1900
Do.....	2	do	2 Conn. Agr. Exp. Sta., Report 1897
Red sandalwood.....	30	5	3 Mass. State Board of Health, Report 1900
Red woody matter.....	30	4	4 Mass. State Board of Health, Report 1900
Starchy matter (wheat).....	30	4	5 Mass. State Board of Health, Report 1900
Starchy matter (corn).....	30	4	6 Mass. State Board of Health, Report 1900
Buckwheat.....	30	4	7 Mass. State Board of Health, Report 1900
Red dye.....	30	2	8 Mass. State Board of Health, Report 1900
An aniline dyestuff.....	28	1	9 Mass. State Board of Health, Report 1900
All adulterants.....	30	1	10 Mass. State Board of Health, Report 1900
do.....	30	1	11 Mich. Agr. Exp. Sta., Report 1898
Do.....	28	1	12 Mich. Agr. Exp. Sta., Report 1897
Do.....	6	1	13 Mich. Agr. Exp. Sta., Report 1897
Do.....	6	1	14 Mich. Agr. Exp. Sta., Report 1897
Do.....	15	1	15 Mich. Agr. Exp. Sta., Report 1897
Do.....	80	6	16 Mich. Agr. Exp. Sta., Report 1897
Cereals, wild mace, false mace, turmeric, and mineral matter.....	8	1	17 Ohio Dairy and Food Com., Report, 1896.
Foreign starch.....	35	3	18 Mich. Dairy and Food Com., Report, 1900.
Mustard cake.....	35	2	19 Ohio Dairy and Food Com., Report, 1896.
Oil cake.....	35	2	20 Mich. Dairy and Food Com., Report, 1897.
Seeds of radish.....	do.....	do	21 Mich. Dairy and Food Com., Report, 1897.
Seeds of rape.....	35	17	22 Mich. Dairy and Food Com., Report, 1896.
Seeds of <i>sinapis arvensis</i>	do.....	18	23 Mich. Dairy and Food Com., Report, 1900.
Seeds of cayenne.....	35	13	24 Mich. Dairy and Food Com., Report, 1896.
Seeds of ginger.....	35	10	25 Mich. Dairy and Food Com., Report, 1900.
Wheat flour.....	35	8	26 Mich. Dairy and Food Com., Report, 1896.
Wheat product.....	35	4	27 Mich. Dairy and Food Com., Report, 1897.
do.....	35	3	28 Mich. Dairy and Food Com., Report, 1897.
Corn meal.....	35	3	29 Mich. Dairy and Food Com., Report, 1897.
Corn starch.....	35	15	30 Mich. Dairy and Food Com., Report, 1897.
Starchy materials.....	35	12	31 Mich. Dairy and Food Com., Report, 1897.
Starch.....	35	17	32 Mich. Dairy and Food Com., Report, 1897.
do.....	35	17	33 Mich. Dairy and Food Com., Report, 1897.
Lime or plaster.....	60	7	34 Mich. Dairy and Food Com., Report, 1897.
Clay.....	60	1	35 Mich. Dairy and Food Com., Report, 1897.
Turneric.....	60	1	36 Mich. Dairy and Food Com., Report, 1897.
Do.....	35	8	37 Mich. Dairy and Food Com., Report, 1897.
Do.....	35	2	38 Mich. Dairy and Food Com., Report, 1897.
Volatile oil removed.....	35	18	39 Mich. Dairy and Food Com., Report, 1897.
Not specified.....	35	19	40 Mich. Dairy and Food Com., Report, 1897.
Starchy materials, mustard, hulls, and turmeric.....	35	10	41 Mich. Dairy and Food Com., Report, 1897.
All adulterants.....	35	26	42 Mich. Dairy and Food Com., Report, 1897.
Do.....	do.....	88	43 Mich. Dairy and Food Com., Report, 1897.
Do.....	do.....	86	44 Mich. Dairy and Food Com., Report, 1897.
Do.....	do.....	69	45 Mich. Dairy and Food Com., Report, 1897.
Martius yellow.....	35	7	46 Mich. Dairy and Food Com., Report, 1897.
do.....	35	1	47 Mich. Dairy and Food Com., Report, 1897.
Color not specified.....	35	8	48 Mich. Dairy and Food Com., Report, 1897.
do.....	35	2	49 Mich. Dairy and Food Com., Report, 1897.
Volatile oil removed.....	35	18	50 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	51 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	52 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	53 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	54 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	55 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	56 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	57 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	58 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	59 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	60 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	61 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	62 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	63 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	64 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	65 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	66 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	67 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	68 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	69 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	70 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	71 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	72 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	73 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	74 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	75 Mich. Dairy and Food Com., Report, 1897.
Do.....	19	10	76 Mich. State Board of Health, Report 1900

Most common articles of food consumption in the United States in an adulterated or other impured form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

VINEGAR.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Number samples adulterated.	Reference.	Remarks.
Cider vinegar.	Spirit vinegar and caramel.	Frequent	Ohio Dairy and Food Comm., Rept. 1899			
Do.	do	do	Ohio Dairy and Food Comm., Rept. 1896			
Do.	do	do	Mich. Dairy and Food Comm., Rept. 1900			
Do.	do	do	New Jersey Dairy and Food Comm., Rept. 1898			
Do.	do	do	Minn. Dairy and Food Comm., Rept. 1901			
Do.	do	do	Conn. Exper. Station, Rept. 1897			
Do.	do	do	Oakland, Cal., Board of Health, Rept. 1899			
Do.	do	do	San Francisco Board of Health, Rept. 1897-98			
Do.	do	do	Wis. Dairy and Food Comm., Rept. 1898			
Do.	do	do	Ohio Dairy and Food Comm., Rept. 1898			
Do.	do	do	Ill. State Food Comm., Rept. 1900			
Do.	do	do	Mass. State Board of Health, Rept. 1900			
Do.	do	do	Penn. Dept. Agric., Rept. 1898			
Do.	do	do	Penn. Dept. Agric., Rept. 1900			
Do.	do	do	Mass. State Board of Health, Rept. 1899			
Malt vinegar.	Spirit vinegar, colored.	Frequent	Ohio Dairy and Food Comm., Rept. 1896			
Do.	do	do	do			
Do.	do	do	do			
Wine vinegar.	Spirit vinegar	do	Ill. State Food Comm., Rept. 1900			
Do.	do	do	Ohio Dairy and Food Comm., Rept. 1897			
Do.	do	do	San Francisco Board of Health, Rept. 1897-98			
Do.	do	do	Minn. Dairy and Food Comm., Rept. 1901			
			Bull. N. Carolina State Board Agric., 1900			

FLAVORING EXTRACTS.

Vanilla extract.	Coumarin	Very frequent	Ohio Dairy and Food Comm., Report 1899	
Do.	Vanillin	do	Ohio Dairy and Food Comm., Report 1898	
Do.	Coumarin	do	Mass. State Board of Health, Rept. 1900	
Do.	Coumarin and vanillin	do	Mich. Dairy and Food Comm., Report 1900	
Do.	Touka	do	Mass. State Board of Health, Report 1890	
Do.	Coumarin	do	Ohio Dairy and Food Comm., Report 1897	
Do.	Coumarin and vanillin	do	Ill. Food Comm., Report 1899	
		Very frequent	Ohio Dairy and Food Comm., Report 1898	

Coumarin shows the use of the Tonka bean.

Strawberry extract.....	Mich. Dairy and Food Comm., Report 1890
Do.....	Ohio Dairy and Food Comm., Report 1896
Artificial.....	Mich. Dairy and Food Comm., Report 1900
Raspberry extract.....	Ohio Dairy and Food Comm., Report 1896
Nectarine extract.....	Mich. Dairy and Food Comm., Report 1900
Lemon extract.....	Ohio State Dairy and Food Comm., Report 1899
Do.....	III. State Dairy and Food Comm., Report 1900
Do.....	do.....
Do.....	do.....
Mace, capsaicin, etc.....	Ohio Dairy and Food Comm., Report 1896
Foreign coloring matter.....	Ohio Dairy and Food Comm., Report 1897
Do.....	II. Food Comm., Report 1890
Do.....	Ohio Dairy and Food Comm., Report 1897
Water.....	

No oil of lemon present.

Lemon extract having a high water content must have a low percentage of oil of lemon owing to its slight solubility in water.

FRUIT PRODUCTS.

Jellies.....	Bull. 66, Bureau of Chemistry.....
Do.....	18 Minn. Dairy and Food Report, 1890
Do.....	Conn. Exp. Sta., Report 1898
Do.....	42
Do.....	do.....
Preservatives.....	Bull. 66, Bureau of Chemistry.....
Do.....	Conn. Exp. Sta., Report 1898
Do.....	10
Coloring matter.....	Bull. 66, Bureau of Chemistry.....
Do.....	11 Minn. Dairy and Food Report, 1900
Do.....	Conn. Exp. Sta., Report 1898
Do.....	29
Apple juice.....	Bull. 66, Bureau of Chemistry.....
Do.....	14 Ohio Dairy and Food Report, 1897
Do.....	Bull. 66, Bureau of Chemistry.....
Do.....	7
Occasional.....	do.....
Starch.....	do.....
Gelatin.....	Ohio Dairy and Food Report, 1899
Do.....	Minn. Dairy and Food Report, 1900
Do.....	do.....
Do.....	do.....
Agar agar.....	do.....
Saccharin	Bull. 66, Bureau of Chemistry.....
Do.....	44 1

*Twelve of this number were labeled "compound."

Used as a substitute for cane sugar.

In many cases preservatives are used to keep the partially prepared fruit until it is made up into jellies rather than to preserve the jellies. Benzolic and salicylic acids are most commonly employed.

Artificial colors, consisting largely of aniline dyes, are used extensively with the cheaper grades of jellies, where but little fruit is used, to procure proper color.

Used as a basis of the cheaper jellies, and very frequently in the better grades.

Serves as a filler and as a softening agent.

Gelatin is used as a softening agent.

Has been reported in Germany, perhaps not used to any extent in the United States.

Used as a sweetening agent where glucose is substituted for cane sugar or where fruit of high acidity is employed.

Most common articles of food consumption in the United States in an adulterated or other imperfect form, the adulterants used, the extent of adulteration, preservatives used, and substitutes, with references—Continued.

FRUIT PRODUCTS—Continued.

Article.	Adulterant.	Extent of adulteration.	Number samples examined.	Reference.	Remarks.
Jellies	Organic acids	Occasional		Senate Report 516, 1900, pp. 22, 28	Citric and tartaric acids are substituted for natural fruit acids in case little or no fruit is used.
Do.	Artificial flavor	16	6	Ohio Dairy and Food Report, 1899, Senate Report 516, 1900, pp. 22, 28	Remarks given above apply as well to jams as to jellies.
Jams and marmalades	Glucose	86	68	Bull. 66, Bureau of Chemistry	These materials are used as the basis for a few of the cheapest grades of jams.
Do.	do	47	43	Bull. 66, Bureau of Chemistry	Used principally, in this class, with fruits put up in heavy syrup.
Do.	Preservatives	86	41	Conn. Exp. Sta., Report 1898	Used principally, in this class, with fruits put up in glass jars.
Do.	do	47	26	Bull. 66, Bureau of Chemistry	Used exclusively, in this class, with fruits put up in glass jars.
Do.	Coloring matter	86	89	Conn. Exp. Sta., Report 1898	Used as a substitute for cane sugar, or with fruits of high acidity.
Do.	do	47	10	Bull. 66, Bureau of Chemistry	Adulteration of this class is confined principally to substitution of glucose for cane sugar, the occasional use of preservatives, and the substitution of apples or apple juice for other fruits.
Do.	Apple juice	10	do	Conn. Exp. Sta., Report 1898	
Do.	Saccharin	86	1	Bull. 66, Bureau of Chemistry	
Do.	Organic acids	1	do	Bull. 66, Bureau of Chemistry	
Do.	Artificial flavor	do			
Do.	Figs, apple pulp, apple residue, and exhausted pulp	do			
Whole fruits	Glucose	74	13	do	
Do	Preservatives	74	10	do	
Do	Coloring matter	74	10	do	
Do	Saccharin	74	1	do	
Fruit butters					
Fruit syrups	Glucose	120	8	Conn. Exp. Sta., Report 1899	
Extracts and juices	Preservatives	120	26	Conn. Exp. Sta., Report 1899	

Do.....	Artificial colors.....	120	67	Conn. Expt. Sta., Report 1898 3 Ohio Dairy and Food Report, 1897.
Do.....	Artificial flavors.....	3	3	Conn. Expt. Sta., Report 1890 8 Ohio Dairy and Food Report, 1897.
Wine.....	Glucose.....	120	23	Conn. Expt. Sta., Report 1890 8 Ohio Dairy and Food Report, 1897.
Do.....	Cane sugar.....	8		
Do.....	Water.....			
Do.....	Alcohol.....			
Do.....	Apple cider.....			
Do.....	Foreign colors.....	40	1	Bull. 18, pt. 8, Div. Chem., U. S. Dept. Agric.
Do.....	Preservatives.....	70	12	do.....
Do.....	Carbon dioxide.....			
Bear.....	Preservatives.....	82	8	Bull. 18, pt. 8, Div. of Chem., U. S. Dept. Agric.
		40	11	Conn. Exper. Station Rep., 1899.
Do.....	Foreign colors.....	22	2	Bull. 18, pt. 8, Div. Chem., U. S. Dept. Agric.
Do.....	Sodium carbonate.....	22	1	do.....
Do.....	Hop substitutes.....			
Do.....	Water.....			
Do.....	Alcohol.....			
Distilled liquors.....	Caramel.....	Frequent		
Do.....	Prune Juice	do.....		
Do.....	Soap	do.....		
		Infrequent		
		Frequent		
BAKING POWDERS AND CREAM OF TARTAR.				
Baking powder.....	Foreign mineral matter.....	Frequent		
Do.....	do.....	do.....		
Cream of tartar.....	80 per cent.....			
Do.....	Alum, calcium sulphate, acid calcium phosphate, and starch.			
Do.....	do.....			
Do.....	Terra alba, acid calcium phosphate.	7	4	
		76	24	
		Frequent		

* Fifteen of this number were labeled "compound."

Bull. 18, pt. 5, Div. of Chemistry, U. S. Dept. Agr.	
Conn. Agr. Expt. Station, Report 1900.....	
Senate Report 516, p. 117, 56th Congress, Second session.	
Senate Report 516, p. 584, 56th Congress, 2d session.	
Conn. Agr. Expt. Station, Report 1900.....	
Senate Report 516, 56th Congress, 2d session, p. 659.....	

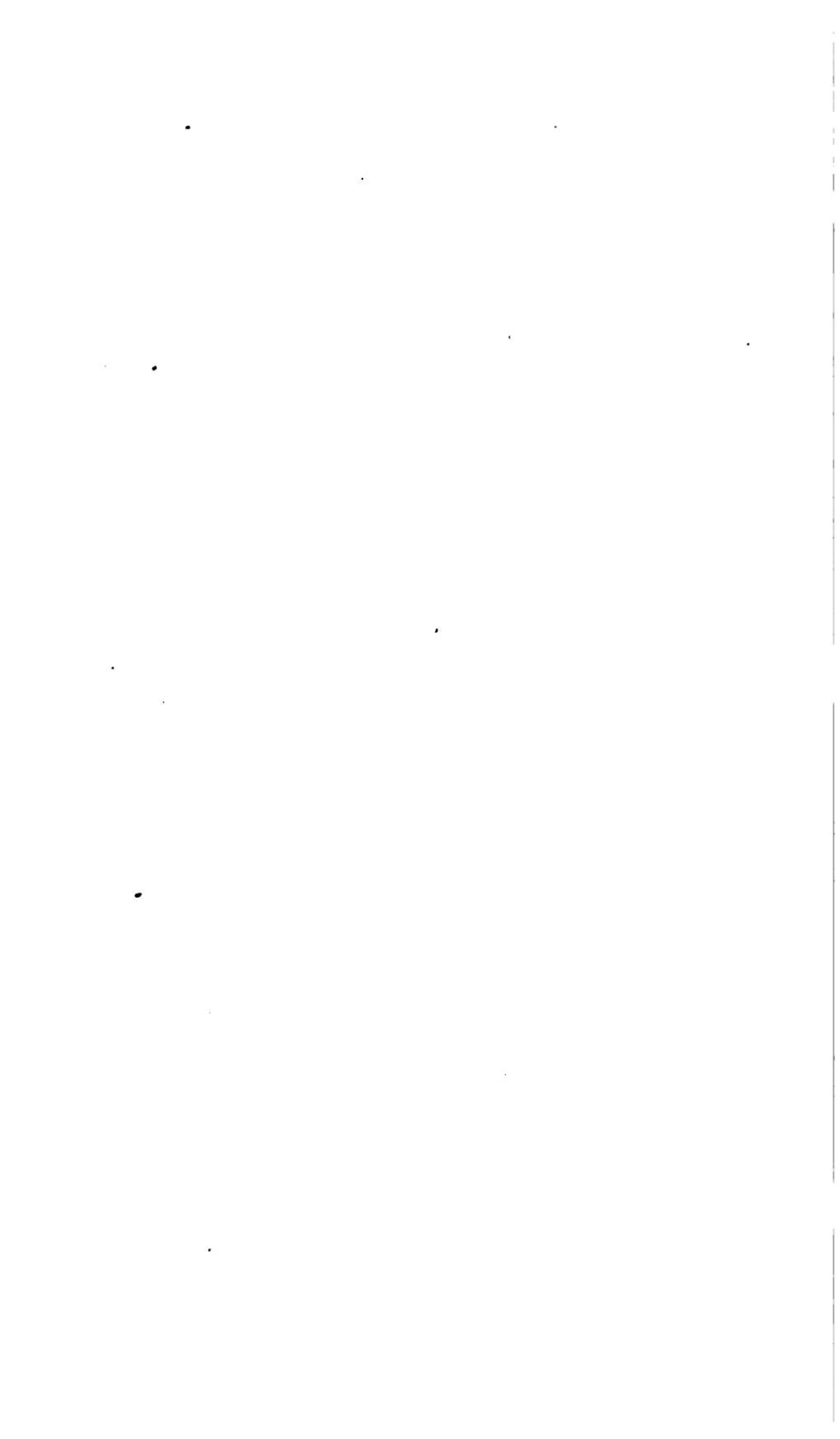


EXHIBIT NO. 2.

Used for reference only in the preceding paper presented by Dr. Wiley to the Committee on Interstate and Foreign Commerce and not for publication, being Senate Report No. 516, Fifty-sixth Congress, first session, entitled Adulteration of Food Products.

FEBRUARY 28, 1900.—Ordered to be printed.

Mr. MASON, from the Committee on Manufactures, submitted the following

REPORT.

(To accompany S. Res. 447, 55th Congress.)

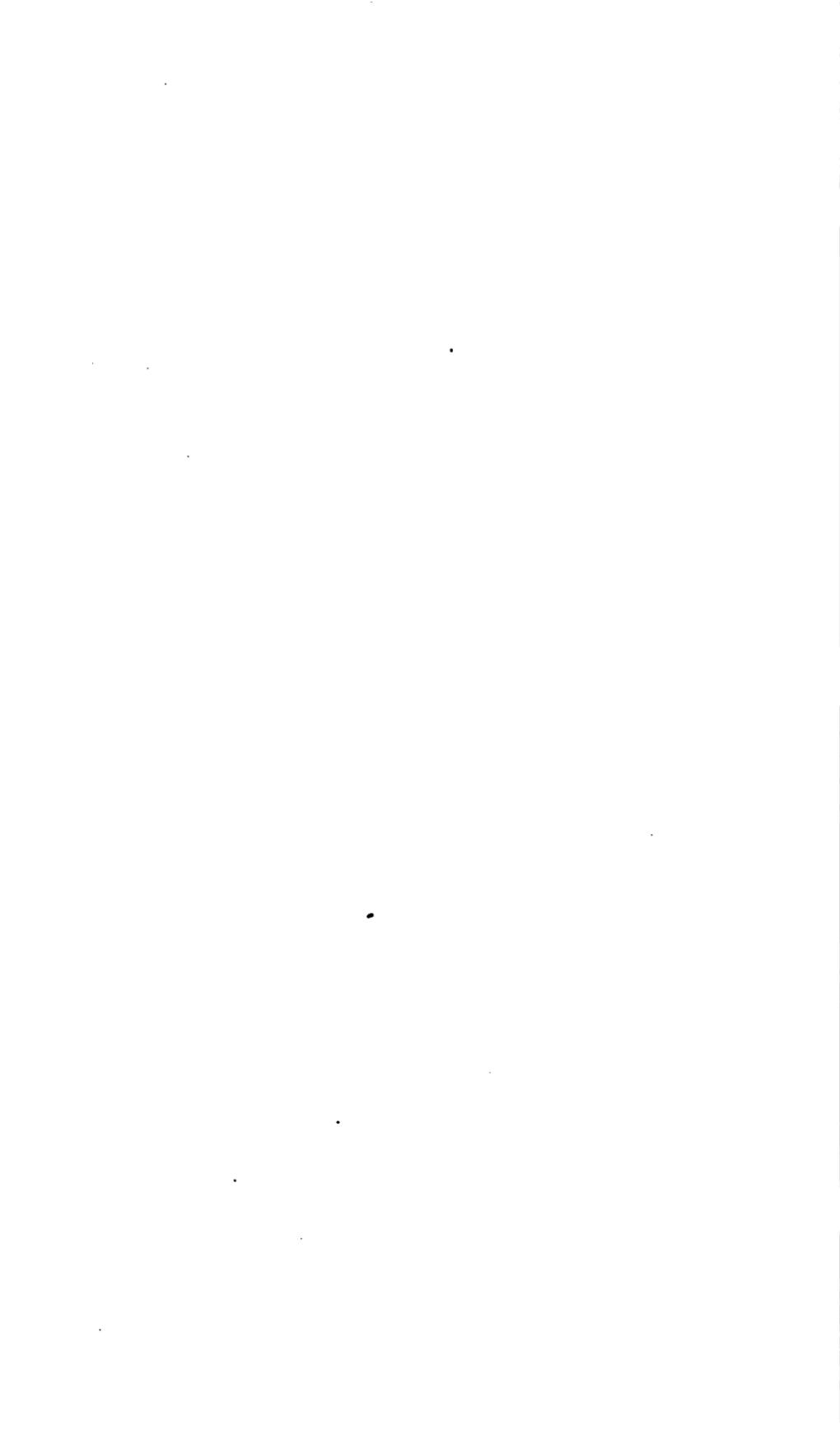


EXHIBIT NO. 8.

[Senate Document No. 141, Fifty-sixth Congress, second session.]

FEBRUARY 6, 1901.—Referred to the Committee on Education and Labor and ordered to be printed.

The PRESIDENT PRO TEMPORE presented the following

LETTER FROM THE CHAIRMAN OF THE INDUSTRIAL COMMISSION TRANSMITTING, IN COMPLIANCE WITH RESOLUTION OF THE SENATE OF DECEMBER 6, 1900, A REVIEW AND DIGEST OF THE TESTIMONY CONCERNING THE ADULTERATION OF FOOD PRODUCTS TAKEN BEFORE THE SENATE COMMITTEE ON MANUFACTURES BETWEEN MARCH, 1899, AND FEBRUARY, 1900, TOGETHER WITH A SEPARATE DIGEST OF CERTAIN ADDITIONAL EVIDENCE RELATING TO BAKING POWDERS; ALSO A DIGEST OF THE LAWS OF THE UNITED STATES AND OF THE SEVERAL STATES AND TERRITORIES RELATING TO THE ADULTERATION OF FOOD AND TO UNWHOLESONE FOOD.

**OFFICES OF UNITED STATES INDUSTRIAL COMMISSION,
Washington, D. C., February 6, 1901.**

SIR: I have the honor to transmit herewith on behalf of the Industrial Commission the review and digest of the testimony concerning the adulteration of food products taken before the Senate Committee on Manufactures between March, 1899, and February, 1900, together with a separate digest of certain additional evidence relating to baking powders; and also a digest of the laws of the United States and of the several States and Territories relating to the adulteration of food and to unwholesome food.

These digests have been prepared in accordance with the following resolution adopted by the Senate December 6, 1900:

Resolved, That the Industrial Commission is hereby directed to prepare and send to the Senate, as soon as possible, a digest of any testimony it may have taken on the subject of adulterating food and drink products, a digest of the so-called pure food and drug laws of the various States, and also a digest of the testimony recently taken before the Committee on Manufactures of the Senate on the same subject;

and with the following resolution of the Senate adopted January 26, 1901:

Resolved, That the Industrial Commission is hereby directed to prepare a digest of the testimony herewith submitted on alum baking powder and send the same to the Senate with its digest of the testimony recently taken before the Committee on Manufactures of the Senate on the adulteration of food and drink products, which was ordered by resolution of the Senate on December sixth, nineteen hundred.

Respectfully,

JAMES H. KYLE, Chairman.

The PRESIDENT OF THE SENATE.



ADULTERATION OF FOOD PRODUCTS.

**REVIEW AND TOPICAL DIGEST OF THE EVIDENCE TAKEN
BEFORE THE SENATE COMMITTEE ON MANUFAC-
TURES BETWEEN MARCH, 1899, AND
FEBRUARY, 1900,**

TOGETHER WITH

**DIGEST OF THE LAWS OF THE UNITED STATES AND OF THE
SEVERAL STATES AND TERRITORIES RELATING
TO FOOD PRODUCTS.**

**PREPARED BY THE INDUSTRIAL COMMISSION IN ACCORDANCE WITH THE RESOLU-
TION OF THE SENATE OF DECEMBER 6, 1900.**

REVIEW OF THE EVIDENCE.

The Senate Committee on Manufactures was authorized by the Fifty-fifth Congress to investigate and ascertain what manufacturers adulterate foods and drinks, and which, if any, of such products are fraudulent. In accordance with this authorization, the committee held numerous sessions in Washington, Chicago, and New York between March, 1899, and February, 1900, inclusive, and heard the testimony of a large number of witnesses, including both professional chemists and physicians who had analyzed food products or observed their physiological effects, and persons practically engaged in the manufacture and sale of foods. Written statements were also received from a number of authorities who were not present in person. Dr. H. W. Wiley, Chief Chemist of the United States Department of Agriculture, besides stating the results of some of his own investigations, met with the committee in some of its sessions and took part in the questioning of other witnesses. The testimony taken by the committee makes a printed pamphlet of more than 600 pages. (Senate Report No. 516, Fifty-sixth Congress, first session.)

EXTENT OF ADULTERATION.

There seems to be a general agreement that foods of American origin have improved in purity during recent years, except in certain particulars. Two witnesses call attention to the lack of pure American food products in former years and the consequent general use of foreign goods, but agree that American manufacturers are now producing even better goods than can be imported. Two explanations are given for the improvement—an advance in national character

and the discovery that honesty is the best policy. It is suggested that more money is to be made out of pure foods honestly labeled than out of adulterated products.¹

Dr. Wiley has stated that probably 95 per cent of all food products have been adulterated at some time in some country; but he estimates that scarcely 5 per cent of the food products bought at random, other than spices and ground coffee, would now be found to be adulterated. Moreover, the adulteration which is injurious to health is much less extensive than that which is merely more fraudulent.² Other witnesses who have analyzed foods have found very little injurious or poisonous adulteration.³ On the other hand, it is said to be impossible to distinguish injurious adulterations from those which are merely frauds, food which is wholesome for one man being unwholesome for another.⁴

Lead poisoning.—Attention is called to the danger of getting soluble salts of lead and tin from the accidental dropping of solder into canned vegetables and from the use of a large proportion of lead in the tin of which the cans are made. The excess of lead causes what is known as painters' colic.⁵

Another source of lead poisoning is the use of lead in siphons used for mineral waters.⁶

MIXED FLOUR.

A kind of terra alba known as mineraline, produced in a North Carolina factory, is said to have been used in an adulteration of flour. It is absolutely insoluble in the stomach, and serves as a mechanical impediment, loading up the stomach with a dead weight. Sulphate of lime or gypsum, ground to a white powder, has also been used as an adulterant of flour.⁷

It is not denied that before the passage of the mixed-flour law it was a common practice to adulterate flour with corn starch, corn flour, and, in some cases, with mineral substances; but the law is thought to have been effective in stopping nearly all the mixing of flour except in the case of such preparations as pancake flour, which are expected to be mixed.⁸

The increased confidence in American flour abroad resulting from the passage of the mixed-flour law is shown to have produced a decided increase in the exports of that commodity,⁹ and the law is generally considered satisfactory, minor amendments only being suggested.¹⁰

BAKING POWDER.

The consideration of the relative merits of baking powder made with cream of tartar and that containing alum gives rise to a number of unsettled questions. Two witnesses claim that the popular prejudice against alum baking powder is kept alive by advertising or reading matter paid for by the manufacturers of cream of tartar baking powder, elsewhere referred to as the baking-powder trust.¹¹ Great stress is laid upon the relative cheapness of alum baking powder;¹² but, on the other hand, it is shown that it is much inferior in leavening power to that made with cream of tartar,¹³ and also that while it is sold at wholesale at very

¹ Hanney, pp. 63, 64; Furbay, pp. 60, 62, 68.

² Wiley, pp. 41, 585.

³ Frear, p. 481; Jenkins, p. 449.

⁴ Vaughan, p. 202; Prescott, pp. 197, 198.

⁵ Wiley, p. 42.

⁶ Edwards, p. 288.

⁷ Wiley, pp. 31, 32.

⁸ Gallagher, pp. 3, 4, 135, 136; Eckert, pp. 26, 27, 28; Wiley, p. 21.

⁹ Gallagher, pp. 7-11, 136; Eckert, p. 27.

¹⁰ Gallagher, pp. 2, 3; Eckert, p. 27; Furbay, p. 62.

¹¹ Rew, pp. 87-89; Austen, pp. 531, 532; see also Delafontaine, p. 230.

¹² Austen, pp. 542, 543.

¹³ Weber, p. 606; Withers, p. 617; McMurtrie, p. 600.

low prices it frequently reaches the consumers at prices as high as those of cream-of-tartar baking powders.¹

Cream of tartar as used in bread making is generally considered uninjurious or even beneficial,² while the charge is brought against alum that aluminum compounds do not occur in either the vegetable or the animal matters which form the natural foods of man.³

Cream of tartar.—There is practically no denial of the wholesomeness of cream-of-tartar baking powder, though one or two witnesses mention that it would be poisonous or injurious in very large doses,⁴ and Professor Munroe considers baking-powder bread in general less wholesome than that made by the process of fermentation.⁵ The chief question concerning cream of tartar is as to its purity. The consulting chemist for three of the principal baking-powder companies says the material used by those companies does not vary appreciably from a purity of 100 per cent;⁶ but other chemists have found the purity of commercial cream of tartar to vary greatly, and some samples bought for cream of tartar to contain no cream of tartar at all.⁷

Alum in baking powder.—There are several questions concerning alum baking powder as to which great difference of opinion exists. The more important of these questions are (1) whether the alum is completely decomposed in the baking of bread, as it is intended to be, or whether some portion of it remains in the bread as alum; (2) whether the residuum is soluble in the digestive juices, and (3) whether it is injurious in the quantities in which it occurs in bread.

The residuum left in the bread by alum baking powder consists of hydrate of aluminum and sulphate of sodium, and, in the case of an alum and phosphate powder, phosphates of calcium and sodium. It is claimed on behalf of the alum baking powders that no alum can be left in the food; that the use of too much alum in baking powder would increase the expense, and is sure to be avoided for commercial reasons.⁸ On the other hand, it is believed by several authorities that alum may sometimes occur in the bread,⁹ and one witness says there are good authorities who believe that the decomposition of the alum is never complete, and that some unchanged alum always remains in the bread.¹⁰

One chemist, who is an officer of a baking-powder company, denies that aluminum hydrate is soluble in the digestive juices, on the authority of an English analyst whose conclusion was based upon experiments on living animals.¹¹ Two authorities consider the solubility of aluminum hydrate doubtful,¹² and several others regard its solubility as established by experiments or otherwise.¹³

Two manufacturers and three apparently disinterested chemists consider the use of alum baking powder harmless, and one of the chemists even goes so far as to say that it is really the most perfect baking powder, because its residuum is smaller than that of any other, and because it generates gas only very slowly before it is heated, enabling the baker to do his kneading more thoroughly and thus produce a more wholesome bread than when it is necessary to hurry the dough into the oven.¹⁴ Several other authorities consider the wholesomeness of

¹ Mitchell, p. 107.

² Prescott, p. 200; Vaughan, p. 206.

³ Weber, p. 606; McMurtrie, p. 599; Munroe, p. 608.

⁴ Delafontaine, p. 232.

⁵ P. 608.

⁶ McMurtrie, p. 594.

⁷ Wiley, p. 584; Mitchell, p. 117; Frear, p. 529.

⁸ Rew, pp. 87-90; Austen, pp. 582, 583.

⁹ Mallet, pp. 551, 552, 559; Mott, 636; Crampton, 628; Mitchell, 108; Vaughan, 206; Woodward, 610.

¹⁰ McMurtrie, p. 596.

¹¹ Rew, pp. 88, 104.

¹² Mew, p. 612; Mott, p. 635.

¹³ Prescott, pp. 196, 197; Mitchell, p. 108; Weber, p. 606; McMurtrie, pp. 596-598; Munroe, p. 608; Fairhurst, p. 620; Crampton, p. 624.

¹⁴ Rew, pp. 87-90; Murray, p. 67; Austen, pp. 535, 541; Delafontaine, p. 230; Petraens, pp. 292, 298.

alum baking powder still in doubt, and three of these gentlemen remark that the burden of proof should be upon those who favor its use.¹

There is a decided preponderance of evidence to the effect that alum baking powder is positively harmful. It is charged with producing a great variety of injurious effects, especially in the digestive tract. It is believed by some of the expert witnesses that its continued use is likely to produce chronic indigestion; and one specialist in diseases of the alimentary tract has reached the conclusion that the great majority of digestive troubles may be traced to white bread and quick hot breads made with baking powder. The claim that alum baking powder makes better bread than the other kinds is offset by the statement that bread made with it is likely to be inferior, the action of the alum on the bicarbonate of soda being irregular and uncertain. Bread made with alum baking powder is also said to have an unpleasant taste, due to the presence of sodium sulphate. A German authority is quoted to the effect that intense nervous disturbance may ultimately result from the absorption of aluminum compounds, the poisonous action of which is very slow. Alum is characterized as an insidious cumulative poison.²

Proposed legislation.—Two legislative solutions of the baking-powder problem are proposed: (1) That manufacturers be required to state the composition of the powder on their labels, and (2) that the use of alum be prohibited. There seems to be no difference of opinion as to the desirability of the first measure, if the use of alum is to be permitted at all; even the advocates of alum baking powder assent to the proposed requirement, though they suggest that instead of giving the formula it would be better to state the substances left in the food, or else that the manufacturer should have the privilege of affirming on the label the harmlessness of the materials used. One chemist advises that all baking powders be labeled as to the minimum percentage of gas they are calculated to evolve.³ A number of witnesses, however, go so far as to recommend the absolute prohibition of the use of alum in baking powder.⁴

Use of alum for whitening bread.—Several witnesses refer to the use of alum by bakers for the purpose of whitening bread and improving its appearance, and wide differences of opinion are expressed as to the harmfulness of this practice. One chemist says the real harm consists in using wormy or inferior flour, the quantity of alum used being too small to do any harm.⁵

Use of alum in the filtration of water.—One of the advocates of alum baking powder speaks of the use of alum on a large scale in the filtration of water in many cities.⁶ Another authority, however, regards this use of alum as of doubtful wisdom, and recommends the substitution of salts of iron. He says further that the alum is intended to be precipitated, but that even if the whole amount remained in the water it would be only in minute quantities as compared with the amount used in alum baking powders.⁷ Two witnesses call attention to the prohibition of the use of alum in England, France, and Germany.⁸

¹ De Schweinitz, p. 614; Munroe, pp. 608, 609; Mew, pp. 612, 613; Woodward, pp. 610, 611; Hallberg, p. 81; Crampton, p. 624.

² Wiley, pp. 46, 588; Fairhurst, p. 620; Johnston, pp. 225, 226; Wise, p. 627; Sternberg, p. 607; Kerr, p. 606; Fleming, p. 604; Johnson, p. 615; Van Reypen, p. 615; Wyman, p. 616; Cornwall, p. 618; Appleton, p. 619; Tucker, p. 618; Price, p. 619; Mallet, pp. 562, 563, 564, 565, 566, 624; Mott, pp. 630-636; Freeman, pp. 619, 620; Stringfield, pp. 548, 549; Cuthbert, pp. 609, 610; Thurber, p. 581; McMurtrie, pp. 597, 598, 601; Vaughan, pp. 202, 205, 206; Weber, p. 608.

³ Wiley, p. 47; Mitchell, pp. 107, 109; Prescott, pp. 196, 197; Rew, p. 88; Delafontaine, pp. 230, 231; Eaton, p. 236.

⁴ Prescott, p. 625; Freeman, p. 620; Johnston, p. 626; Wise, p. 627; Fairhurst, p. 620; Kerr, p. 605; Appleton, p. 619.

⁵ Wiley, p. 46; Stringfield, p. 549; Crampton, pp. 622, 623; Petraens, p. 292.

⁶ Austen, pp. 533, 534.

⁷ Mallet, p. 565.

⁸ McMurtrie, p. 600; Crampton, p. 622.

OLEOMARGARINE.

A number of gentlemen more or less intimately associated with the oleomargarine industry describe the methods of manufacture, and assert that only pure materials are used and that all the processes are cleanly.¹ Their testimony as to the wholesomeness and nutritive value of oleomargarine is confirmed by a number of disinterested witnesses.²

One chemist, who does not think the best butterine equal to the best butter, says that there are grades of butter which are inferior to good or average butterine;³ and this impression is confirmed by reading some of the descriptions given of the processes of renovating rancid and inferior butter.⁴

Fraudulent sale.—The principal charge brought against oleomargarine is that it is sold fraudulently for butter.⁵ On the other hand, both dealers and manufacturers of oleomargarine give testimony tending to show that the product is sold for what it is, that it is advertised widely, and that purchasers, even when they ask for butter, know whether they are getting butter or oleomargarine from the difference in price.⁶ One witness, however, makes the point that while keepers of boarding houses and restaurants know what they are buying, their boarders do not know what they are getting on the table.⁷

Imitative coloring.—The use of coloring matter in butter and oleomargarine is a vexed question. It appears that it is now a nearly universal practice to color genuine butter during the winter months. This is said to be done for the sake of uniformity and to make the product pleasing to the eye.⁸ It is claimed on behalf of the butter interests that a distinction should be made between this coloring of butter and the coloring of another substance, such as oleomargarine, in imitation of butter. On the other hand, some of the oleomargarine manufacturers assert that their product is not colored to imitate butter, but for the same reason that butter is colored.⁹ One witness even goes so far as to say that since the advent of butterine the creamery men have found it necessary to imitate it by coloring their butter.¹⁰

The proposal to prohibit the coloring of oleomargarine in imitation of butter finds some support among food experts,¹¹ but is naturally enough objected to by those who are interested in the oleomargarine industry,¹² one of whom says that a law prohibiting the use of coloring matter in either butter or oleomargarine would hurt the butter industry more than the oleomargarine industry.¹³ Several witnesses believe that oleomargarine could not be sold unless it were colored in imitation of butter.¹⁴

The nature of the coloring matter used is another question concerning which there are different opinions. It is charged that the use of vegetable colors has been largely superseded by aniline dyes,¹⁵ but this is denied.¹⁶

¹ Sterne, pp. 221-228, 341; Miller, pp. 322-324; Pirrung, pp. 313-315; Dadie, pp. 325, 326; Jelke, pp. 332, 333; Potter, pp. 335, 337.

² Wiley, pp. 14, 16; Delafontaine, p. 231; Mallet, p. 556; Hobbs, p. 496; Miller, pp. 348-350.

³ Delafontaine, p. 231.

⁴ Sterne, pp. 221, 226, 227; Duff, p. 498.

⁵ Frear, p. 329; Hobbs, pp. 495, 496; Knight, pp. 139-141, 146-149.

⁶ Cliff, pp. 154, 155; Poilak, p. 152; Broadwell, pp. 158-166; Somes, pp. 151, 152; Sterne, pp. 225, 226, Pirrung, pp. 319, 320, 338; Dadie, pp. 326-328; Potter, p. 336; Thompson, p. 338; Miller, p. 324; Jelke, p. 333; Sterne, p. 342.

⁷ Adams, p. 208. See also Mitchell, p. 109.

⁸ Knight, pp. 141-148; Pirrung, p. 317.

⁹ Sterne, pp. 223, 224; Miller, p. 324.

¹⁰ Miller, p. 324.

¹¹ Knight, pp. 110, 127.

¹² Pirrung, p. 318; Sterne, p. 224.

¹³ Sterne, p. 224.

¹⁴ Knight, pp. 139, 141; Adams, p. 208; Broadwell, 166.

¹⁵ Delafontaine, p. 229; Vaughan, p. 208.

¹⁶ Sterne, p. 228; Pirrung, p. 315.

Opposition to the tax.—Several witnesses object to the existing tax on oleomargarine on the ground that it increases the price of a product used by persons in moderate circumstances. The existing tax of \$48 a year is complained of as being too high a tax to expect from retail dealers.¹ On the other hand, the constitutional point is raised that nothing can be done by the National Government to control the manufacture and sale of such products except through an internal-revenue law.²

Benefit to the animal industry.—A Chicago commission merchant who has been closely identified with the oleomargarine business believes that while the production of imitation butter is only about 6 per cent as great as that of butter from cream and milk, the demand for the fats used has raised the price of cattle and hogs throughout the country.³

OTHER ANIMAL PRODUCTS.

Milk.—While milk is often adulterated by the addition of water and by the use of preservatives and sometimes coloring matter, the most common form of adulteration is probably the abstraction of the fat in the cream, as in skinned milk.⁴ It is stated that a child fed upon skinned milk may suffer as much as if a poison were administered, from not getting the proper food constituents.⁵

Condensed skinned milk.—Several witnesses call special attention to the use of skinned milk in the preparation of condensed milk, a practice which is said to endanger the lives of children fed with the product by slowly starving them.⁶

Two witnesses, one of whom represents a leading condensed milk company, consider a national law necessary to prevent the sale of condensed skinned milk, because it is so commonly shipped from State to State and used on shipboard.⁷

Cheese.—It appears to be a common practice to adulterate cheese by substituting for the butter fat other fats which are inferior to it, though not necessarily less nutritious or at all deleterious. Cheese filled in this manner is said to be undesirable in that it does not ripen normally and soon spoils, besides being less palatable.⁸

Lard.—It appears from the testimony of several witnesses that lard is quite generally adulterated with cotton-seed oil and beef stearin, neither of which is considered deleterious to health.⁹ Cocoanut oil is also said to be used as a substitute for lard; but the only lard adulterant which is considered injurious to the health is paraffin wax, which is sometimes used instead of stearin to bring back the consistency of the lard after cotton-seed oil has been added.¹⁰

Canned beef.—Attention is called to the lack of nutritive quality in canned roast beef and in boiled beef, on account of the extraction of part of the valuable material.¹¹

Horseflesh.—It is thought probable that horseflesh has been sold in this country for food, as it is known that horses are slaughtered for food in this country, and it would be easy to make horseflesh pass for beef, especially for the coarser grades of beef. Its sale in many parts of Europe has become quite common.¹²

¹ Pirrung, pp. 320-322; Jelke, pp. 33, 334; Wiley, p. 14.

² Knight, p. 138.

³ Sterne, p. 341.

⁴ Wiley, p. 13.

⁵ Vaughan, p. 202.

⁶ Hallberg, p. 82; Monred, pp. 64, 65; Duff, p. 497; Rogers, pp. 440-443.

⁷ Rogers, p. 443; Monred, p. 65.

⁸ Wiley, p. 14; Mitchell, p. 110.

⁹ Wiley, pp. 15, 16; Mitchell, p. 126; Jenkins, p. 451; Eaton, pp. 234, 235.

¹⁰ Mitchell, pp. 126, 127.

¹¹ Hallberg, p. 81.

¹² Wiley, p. 40.

Fraudulent sales of game birds and fish.—The sale of English sparrows for reed birds, and of other birds for high-priced game birds which they resemble, is said to be a common commercial fraud. Restaurants and markets often sell one kind of duck for another, and other turtles for terrapin. The sale of one kind of fish for another, as in the case of spurious sardines, is a fraud of similar nature which is also objected to.¹

SUGAR, SIRUP, AND GLUCOSE.

Sugar.—Representatives of the principal sugar-refining companies testify that sugar as now made is pure, though formerly it was commonly adulterated on account of the cheapness of glucose.² Concerning the purity of powdered sugar there is a difference of opinion, two witnesses thinking it nearly always pure,³ while one intimates that it is generally adulterated with cornstarch, and another says it contains an insoluble substance, probably mineraline.⁴ Maple sugar is said to be adulterated very extensively with yellow sugar from the refineries, though pure maple sugar can be obtained from Vermont and elsewhere.⁵

Sirup and molasses.—It appears that table sirup and molasses are adulterated with glucose to a considerable extent,⁶ but this is especially true of maple sirup, on account of the expensiveness of the genuine article.⁷ One manufacturer, however, states as a result of his experience that the greater part of the maple sugar sold is pure.⁸

It seems that extracts of hickory bark have been used to give the maple flavor to sirup, but it is stated that neither this nor any artificial maple flavor has ever been used successfully.⁹

Nutritive value of glucose.—The preponderance of testimony is to the effect that glucose is a nutritive and wholesome food;¹⁰ but one witness believes it to be harmful,¹¹ and another considers its wholesomeness so doubtful that he prefers to avoid it.¹²

Proposed labeling law.—All the witnesses who discuss the question are in favor of requiring sirup adulterated with glucose to be labeled as to its composition.¹³

CONFECTIONERY.

The main constituents of confectionery are sugar, glucose, and flour, all of which are nutritious and appeal to the natural taste of the child for sweets. Sweet materials of vegetable origin are considered beneficial, furnishing heat and adipose tissue. In the higher grades of candy pulps of fruits and nuts are used, adding much to the expense. In acidulated goods, such as lemon drops, citric or tartaric acid is generally used. For flavoring, both vegetable and chemical flavors are used.¹⁴

Injurious materials.—It appears that terra alba has been largely used in confectionery, but its use is said by the confectioners themselves to have been dis-

¹ Wiley, p. 40.

² Schiller, pp. 430, 431; Havemeyer, pp. 466, 467.

³ Schiller, p. 431; Tucker, p. 436.

⁴ Smith, p. 184; Gallagher, p. 4.

⁵ Wiley, pp. 29, 30; Scully, p. 95.

⁶ Wiley, pp. 28-30; Jenkins, p. 451; Scully, p. 90.

⁷ Wiley, p. 29; Berry, pp. 96, 97; Scully, pp. 90-93.

⁸ Berry, p. 97.

⁹ Wiley, p. 29; Scully, p. 93.

¹⁰ Wiley, p. 21; Prescott, p. 197; Mallet, p. 556; Scully, p. 94.

¹¹ Piflard, p. 192.

¹² Hallberg, pp. 82, 83.

¹³ Berry, pp. 96, 101; Wiley, p. 30; Mitchell, p. 119; Chittenden, p. 428.

¹⁴ Wiley, pp. 30, 31; Gunther, pp. 306, 307; Berry, p. 306.

continued. While it is not poisonous, its use in confectionery or other food is severely condemned by scientists. The use of alcoholic materials in gum drops and other candy is also considered extremely reprehensible, and its prohibition is recommended. Poisonous coloring matters have also been found, such as aniline dyes contaminated with arsenic.¹ But the Confectioners' Association of the United States, which is said to include almost every reputable confectioner in the country, was organized with the purpose of preventing the use of deleterious substances, and it is believed to have succeeded. It maintains a fund for the prosecution of manufacturers who use terra alba. It investigates cases in which sickness is said to have been caused by eating candy, and usually finds that that was not the true cause.²

National regulation proposed.—The confectioners themselves are foremost among those who desire national legislation to regulate the manufacture of candy, and to suppress the numerous small and ill-conducted concerns, such as those operated in basements and cellars by ignorant persons.³

HONEY.

Adulteration of extracted honey.—There is considerable testimony tending to show that honey is adulterated very extensively. Dr. Wiley thinks it a safe estimate to say that half the strained honey on the market in the United States is adulterated. The principal adulterant used is glucose, though it is said that cane sugar is also used, both by direct addition to the extracted honey and by feeding it to the bees. Attempts have been made to feed glucose to the bees in a similar manner, but they have not been successful.⁴ It is remarked by two witnesses that a piece of comb in strained honey is a badge of fraud, genuine honey not being sold in that way.⁵ The adulteration of honey is said to be carried on by the wholesale dealers, not by the bee keepers themselves.⁶

Proposed legislation.—The only legislation asked for in the case of honey is for the purpose of preventing fraud, for the benefit of the bee keepers as well as of the public; and the measure proposed is the requirement of an honest label.⁷

JELLY.

Old-fashioned pure fruit jelly seems to have gone out of fashion, as far as the commercial product is concerned, except in the case of some of the high-priced goods. Commercial jelly is made sometimes of gelatin, and sometimes the foundation is glucose, to which is added a certain amount of apple juice from skins and cores obtained from dried-apple factories. In either case the so-called jelly is artificially flavored and colored.⁸ An acid preparation is also used in the glucose jelly to make it "jell." It seems probable that hydrochloric acid in very small proportions is generally used for this purpose, and this is not considered injurious in the quantities in which it is used; but it is charged that sulphuric acid is also used in some cases.⁹ Acetic acid is thought to be used for flavoring in such small quantities as to be uninjurious.¹⁰

¹ Wiley, pp. 31, 32; Vaughan, p. 203; Billings, p. 249; Gunther, p. 307; Faulkner, p. 308.

² Gunther, pp. 304, 306; Berry, p. 309; Shields, p. 309. See also Coloring materials, p. 15.

³ Gunther, p. 306; Shields, pp. 309-311.

⁴ Wiley, pp. 14, 15, 213, 214, 586; York, pp. 209, 210, 213-215; Eaton, pp. 235, 236.

Wiley, pp. 213, 214; Moore, p. 217. See also York, pp. 213, 214.

⁵ York, pp. 209, 210, 215, 216; Stowe, pp. 216, 217.

⁶ Moore, p. 220; York, pp. 210, 215; Eaton, p. 236.

⁸ Wiley, pp. 22, 23, 584; Jenkins, p. 451; Prescott, p. 198; Stewart, p. 79; Vaughan, p. 204; Berry, pp. 98, 99, 101.

⁹ Berry, pp. 98, 100; Vaughan, p. 204; Mitchell, pp. 132, 133.

¹⁰ Chittenden, pp. 424, 425.

CONDIMENTS.

Spices.—It appears from the testimony that nearly all spices are adulterated by being mixed with some inert and harmless substance called a filler, consisting sometimes of ground peanut and cocoanut shells, sometimes of colored flour, and sometimes of middlings or bran. One manufacturer, however, claims to make nothing but strictly pure spices, and another says only the goods he makes to order for dealers wanting goods at a low price are adulterated.¹ One case is mentioned in which ginger was adulterated with old tarred rope to give it a stringiness similar to that of real ginger.² In cloves, clove stems are used. These stems are said to have a slight flavor of cloves.³

Horse-radish is adulterated to a considerable extent with Indian turnips, which would be very unhealthful in large quantities.⁴

Mustard.—The principal adulterant for mustard is flour colored with turmeric; but plaster of paris has also been used.⁵

Pepper.—It is stated that ground pepper can seldom be obtained in a pure state. Among the adulterants used in it are mentioned cracker meal, ground corn and other refuse, a preparation of acids and charcoal, and for cayenne pepper, an acid preparation colored with an aniline dye. The adulterants are mixed in with the real pepper in the process of grinding.⁶

Salt.—Salt is sometimes mixed with a small amount of cornstarch to act as a lubricant and to make the salt run more freely from the cruet. This addition is sometimes stated on the label, but not always.⁷

Vinegar.—It seems that most of the vinegar sold in this country is what is known as low-wine vinegar, made by oxidizing the low wines of the distillery by allowing them to trickle over beech shavings and thus converting them into acetic acid, which is then artificially colored and perhaps a little of some solid substance added. This product is cheaper than either cider vinegar or malt vinegar. It is not claimed that any of these vinegars are injuriously adulterated, but only that they should be sold under their proper names.⁸

Alum in pickles.—Alum is used as a mordant in fixing the color of pickles, at least for the export trade.⁹

Tomato ketchup is said to be made from the cores and skins of tomatoes, dyed with a coal-tar dye, and preserved with salicylic or benzoic acid. The great majority of tomato ketchups contain some antiseptic, usually salicylic acid.¹⁰

Table oil.—About half the brands of olive oil examined by the Connecticut Agricultural Experiment Station were found to contain mixtures of cotton-seed oil and oil of sesame. It is said that practically all of the 6,000,000 gallons of cotton-seed oil produced in this country is sold either as "table oil," "salad oil," or "olive oil." Hundreds of barrels of cotton-seed oil sent to France and Italy are said to return to this country as olive oil, or mixed with olive oil. On the other hand, Italian witnesses testify that the adulteration of olive oil in Italy has been rendered difficult by a high duty on the cotton-seed oil, and that most of the adulteration takes place in the United States. Peanut oil is also said to be mixed with most of the olive oil exported from France. These practices are not criticised on the ground of healthfulness, but only on the ground of fraud.¹¹

¹ Wiley, pp. 17-19; Delafontaine, p. 229; Stewart, p. 78; Murray, pp. 66, 272.

² Mitchell, p. 119.

³ Murray, p. 69; Hallberg, p. 80.

⁴ Cliff, 156, 157.

⁵ Wiley, p. 17; Murray, p. 69; Duff, p. 497; Jenkins, p. 452.

⁶ Duff, p. 497; Jenkins, p. 452; Hallberg, p. 84; Wiley, p. 18.

⁷ Piffard, pp. 188, 190.

⁸ Wiley, pp. 24, 25, 234; Frear, pp. 528, 529; Eaton, 233, 234.

⁹ Prescott, p. 199; Cliff, pp. 155, 156.

¹⁰ Jenkins, pp. 452, 453; Wiley, p. 44.

¹¹ Wiley, p. 16; Rossati, pp. 446, 447; Zucca, pp. 485, 486; Furbey, p. 61.

TEA AND COFFEE.

Tea not commonly adulterated.—It is refreshing and rather surprising to read that tea is not commonly adulterated.¹ The duty of 10 cents a pound on tea is said to have had the effect of shutting out the lowest grades.² The chemist of the New York Produce Exchange, however, speaks of finding one very poor sample of tea, almost entirely lacking in theine and largely composed of stems; it had the appearance of having been once used and then dried. It also contained pods of seeds and some hair, which may have been accidental impurities.³

Facing and coloring of tea.—Tea is said to be increased in weight by the use of mineral substances, which also improve its appearance, and it is said that the green color is often secured artificially; even the finest teas seem often to be adulterated and colored in this way, and perhaps with injurious effects.⁴

Legal standard proposed.—It is recommended that a chemical standard be established for tea, and that it be required to come up to that standard.⁵

Coffee adulterations.—Several witnesses testify that the adulteration of coffee is very extensively carried on, especially in the case of ground coffee. Even unground coffees have been imitated by the manufacture of artificial berries, but these, it seems, are no longer found in the market. Chicory and crushed peas are the principal adulterants mentioned. The use of chicory is not objected to except on the ground of cheapness and fraud, and is even said to improve the flavor of the coffee. Coffee adulterated with chicory is therefore considered a permissible compound if properly labeled.⁶ The use of chicory and other adulterants in coffee is denied by two witnesses, their disuse being explained by the cheapness of real coffee in recent years.⁷

"Black-jack."—One of the principal forms of adulteration of coffee is said to be the inclusion of "black-jack," that being the trade name for overripe or dead beans which have become sour. These black beans are considered deleterious to health, their use being said to create in the consumer a perverted taste. Various other impurities are also said to be included in the poorer grades.⁸

Glazing and coloring of coffee.—The imperfections of coffee are covered up by the use of glazing and a mineral color to produce a shiny appearance and uniform coffee brown.⁹ The use of glazing is defended by one witness on the ground that it diminishes evaporation during roasting.¹⁰

Proposed legislation.—The establishment of coffee standards which should limit the proportion of damaged berries and other imperfections, or specify the minimum percentage of caffetannic acid, is strongly recommended by two gentlemen.¹¹ Others propose to prohibit entirely the importation of coffee containing black beans, and to prohibit the use of glazing.¹²

One witness believes that a duty on coffee would operate to exclude black-jack and other inferior grades;¹³ but, on the other hand, it is argued that a 5-cent duty did not have this effect when it was in force, and that the proposed 3-cent duty would not be any more effectual.¹⁴

¹ Jenkins, p. 452; Wiley, p. 18.

² Stewart, p. 77.

³ Duff, p. 498.

⁴ Wiley, p. 48; Duff, p. 499.

⁵ Hallberg, p. 84.

⁶ Wiley, pp. 17, 18; Mitchell, pp. 119, 120; Jenkins, pp. 451, 452; Vaughan, p. 205.

⁷ Stewart, p. 76; Jarvie, p. 429.

⁸ Stewart, pp. 78, 74, 76, 77; Jarvie, pp. 428, 429.

⁹ Mitchell, p. 121; Stewart, p. 75.

¹⁰ Duff, p. 499.

¹¹ Thompson, pp. 48, 49; Hallberg, p. 88.

¹² Stewart, pp. 74, 75; Mitchell, p. 121.

¹³ Thompson, p. 49.

ALCOHOLIC BEVERAGES.

Beer.—A very common modern practice in making beer is to use corn, rice, or a little raw barley, and sometimes grape sugar (glucose in a solid form) as substitutes for a portion of the malt. The grape sugar is used for the sake of cheapness, but the unmalted grains seem to be used as adjuncts to the malt to produce a light beer and improve its taste, an all-malt beer being said to be almost unsalable in this country; it contains an excess of albuminoids and is too strong and heavy for the popular taste.¹

There is a difference of opinion among the disinterested chemists as to the wholesomeness of beer made with unmalted cereals, one university professor agreeing with the majority of the brewers that their use has no injurious effects, while another chemist believes that beer made from rice and corn products is distinctly injurious.²

One of the brewers considers all-malt beer more wholesome and otherwise desirable than other kinds.³ Beer made with grape sugar is said to be more apt to produce digestive disturbances than pure malt beer;⁴ but one witness considers this substitution for malt less objectionable than the use of glucose for sugar, because the sugar in malt is converted into glucose in making beer.⁵

Hop substitutes do not seem to be used in this country, but when hops are cheap hop extracts are made to be used when hops shall have risen in price, and the meal contained in the hop cone is also used. No wholesome bitter has been found to take the place of hops, and the newspaper charge that aloes are used is discredited.⁶ There is, however, a great variation in the quality of the hops and other materials used, and consequently in the beer itself.⁷

Legal standard for beer.—Nearly all the brewers who express any opinion on the subject are in favor of national regulation and inspection of the brewing industry as preferable to regulation by the various States. They seem to be generally in favor of the establishment of a legal standard for beer by the United States Government, regulating either the amounts and proportions of ingredients used or the minimum original gravity.⁸ Three witnesses connected with the brewing industry, however, think it impracticable or undesirable to fix a legal standard for beer, partly on account of the variation in individual tastes.⁹

Malt extract.—The distinction between malt extract and beer is explained to be in the proportion of malt and alcohol. Malt extract contains a minute quantity of alcohol and a large quantity of malt, the only other ingredients being hops and other vegetable bitters which are beneficial to health. It is charged, however, that all brewers now sell beer as malt extract, and the importance of a national law fixing the standard of malt extract is suggested. The German and Austrian Governments compel the percentage of malt extract to be marked.¹⁰

Blended liquors.—Three kinds of blending in the manufacture of liquors are distinguished: (1) Wines from different vineyards and of different flavors are blended to make a uniform product from year to year; (2) strictly artificial liquors are manufactured, as in the imitation of claret by a combination of alcohol,

¹ Wiley, p. 19; Wyatt, pp. 401, 402; Busch, pp. 487, 498; Oehne, p. 295; Fecker, p. 299; Thomann, pp. 351-356; Liebmann, pp. 394-396; Kruesler, pp. 377, 378; Wigan, pp. 375, 376.

² Chittenden, p. 424; Piffard, pp. 188, 190.

³ Zeltner, pp. 456-458.

⁴ Wiley, pp. 19-21.

⁵ Hallberg, p. 82.

⁶ Schwartz, pp. 371, 374; Wyatt, pp. 408, 411.

⁷ Wiley, 21; Fecker, p. 299; Oehne, p. 297.

⁸ Pabst, p. 311; Fecker, p. 298; Plautz, p. 301; Oehne, p. 298; O'Reilly, p. 462; Zeltner, pp. 456, 459; Hupfel, p. 380; Hachemeister, p. 416; Lippe, pp. 381-384, 393; Brown, pp. 388, 389.

⁹ Busch, pp. 491-493; Schwartz, p. 374; Wackenhuth, p. 418.

¹⁰ Eisner, pp. 432, 433.

sugar, glycerin, tannin, essential oil, an artificial flavor, and a coloring matter; (3) but the most common form of blending is the process which is made to take the place of aging in the case of distilled liquors. While the first form of blending is considered perfectly legitimate, the other two forms are regarded as objectionable as being both fraudulent and injurious to health, the artificial products being less wholesome than the natural ones, and in some cases positively injurious.¹

Fabrication and adulteration of wines.—Dr. Wiley has examined samples of wine purporting to be sherry, port, and sweet catawba, which contained no fermented grape juice at all, but were made of alcohol, commercial glucose, a little tannin, and aniline dyes in such quantities that several tufts of wool were beautifully dyed with the coloring material taken from one of the samples. Another common form of the sophistication of wine is by the addition of alcohol. The president of the Brotherhood Wine Company believes that there is very little adulteration or mixing of American wines, and another witness confirms this statement in some degree by saying that there is more adulteration of liquors in Europe than in America, artificial wines which could not lawfully be sold in the country of origin being exported to America. In the wine-producing States of Germany the manufacture of artificial wine and also of second wine (by the addition of chemicals and sugar to the pressed grapes) is permitted, but the product must be sold under its true name. The amount of materials which may be added to wine is limited by law. The Italian laws on this subject are said to be very strict and effective in preventing the adulteration of wine, but Italian wines have been adulterated to some extent after importation to this country.²

Artificially carbonated champagne.—The adulteration of true champagne, which is defined to be a sparkling wine fermented in the bottle during a period of from 2 to 4 years, is thought to be impracticable, but the manufacture of so-called champagne by the artificial carbonation of light-colored still wines is a very common practice.³ The witnesses who are most closely connected with the artificial carbonation of wines state that the gas used is a pure natural gas, and claim that their product is more wholesome and otherwise desirable than champagne made by the original process.⁴ On the other hand, artificially carbonated wine seems to disagree with some persons, and it is objected to also on the ground that its production tends to discredit all American champagnes.⁵ The cost of producing this artificially carbonated champagne is estimated at from 25 to 85 per cent of the cost of producing champagne of the original kind.⁶ Artificially carbonated champagnes contain much less alcohol and have a shorter period of effervescence than the natural champagnes, but American champagne produced by fermentation in the bottle is considered by experts to be as fine as any in the world, if not superior to any other.⁷

Whisky and brandy.—In the aging of whisky the raw whisky is put into casks of oak, usually slightly charred on the inside. The whisky extracts from the wood a little tannin and coloring matter. The alcohols are oxidized, forming volatile ethers, which lend a pleasant aroma to the liquor. By this process the raw whisky is said to be transformed in the course of years into a fragrant, palatable, and soothing drink. This aging of liquors, however, is an expensive process, on account of the great length of time required, and an artificial process has, therefore, been invented for producing a similar effect in a short time. For

¹ Wiley, pp. 58-56; O'Reilly, p. 461.

² Wiley, pp. 53, 54, 586; Wyatt, pp. 410, 411; Emerson, p. 507; Hochstadter, p. 470; Eltel, p. 291; Rosati, pp. 445, 446; Zucca, p. 485.

³ Emerson, pp. 501-507; Wheeler, p. 521.

⁴ Ripen, pp. 569-579; Minor, pp. 573-576; Werner, p. 577.

⁵ Bauder, pp. 514, 515; Emerson, p. 508.

⁶ Ripen, p. 572; Cook, p. 519.

⁷ Wiley, pp. 569, 590; Emerson, pp. 509-512; Harrison, pp. 591, 592; Hildreth, pp. 510-512.

this purpose ethyl alcohol, or cologne spirits, is diluted to the usual strength of whisky, colored brown or reddish with burnt sugar, and flavored with artificial ethers to resemble either whisky or brandy, as the case may be. It is said that considerably more than half the whisky in this country is compounded in this way, though a little old whisky is usually mixed with the new.

The manufacture of the whisky and brandy essences is carried on by the same manufacturers who make flavoring extracts for soda water. It is regarded as a legitimate business in itself, but the product is used by the blenders of liquor for fraudulent purposes. It is very difficult to distinguish liquors compounded in this way from the genuine liquors, on account of the practice of blending, and because the product seems to be chemically about the same in either case, though the physiological effects are different.¹ It is proposed that the compounded liquors be required to be labeled as such.²

The most common form of adulteration of whisky, aside from this artificial aging, appears to be the addition of water, which is commonly practiced in saloons of the lower grade. Tannin has also been found in some of these diluted whiskies, but its presence may have been due to keeping the liquor in bad casks.³

False labels.—The abuse most complained of in connection with the manufacture and sale of liquors is fraudulent or misleading labeling. The bottlers of foreign ales are frequently troubled by having the foreign labels imitated by photographic or other facsimiles, and also by the refilling of genuine bottles, for which it is more difficult to obtain conviction.⁴

Complaint is made that artificially carbonated champagne is not labeled in a way to indicate the method of manufacture, but is sold for true champagne at about double the price of carbonated champagne, besides being generally labeled to give the impression that it is of French or Italian origin.⁵ Two manufacturers of carbonated champagne testify that their firms use no foreign labels, but place the firm names on the bottles. The majority of champagne makers, however, are believed to use labels containing French words to give the impression of foreign origin. Some imported champagne is also said to be artificially carbonated and falsely labeled with the names of well-known makers.⁶

A very large proportion of the still wines made in America are said to be sold under fraudulent foreign labels, even the best of the American wines being sold as foreign wines. Wine sold in quantities is sometimes labeled to suit the purchaser.⁷ The president of one wine company, however, states that his company uses American labels, and does not imitate any foreign or domestic wine.⁸

A common abuse is the sale of domestic spirits, largely the product of illicit distilleries, under counterfeit labels, usually as imported whiskies, brandies, or wines. There are said to be comparatively few saloons which do not refill foreign bottles in this fraudulent manner. On the assumption that no tax is paid on the domestic spirits thus sold under foreign brands, it is estimated that the Government loses \$6,000,000 a year in customs duties; though in some cases internal-revenue taxes are paid on the whisky used in this fraudulent way, so that the Government loses only the difference between the internal revenue and the import duty. One wholesale liquor dealer says this estimate can not be substantiated, but another witness says it is generally believed to be an underestimate.⁹ One witness showed the committee 83 fraudulent labels, all made in imitation

¹ Wiley, pp. 54-57; Chittenden, p. 424.

² Wiley, p. 57.

³ Chittenden, p. 423.

⁴ Broun, pp. 399, 400; Roche, p. 414.

⁵ Wheeler, p. 521.

⁶ Ripen, pp. 572, 573, 577; Werner, p. 577.

⁷ Emerson, p. 507; Eltel, pp. 290, 291; Wiley, pp. 40, 41.

⁸ Hildreth, pp. 510, 512.

⁹ Sadler, pp. 396-398; Hochstadter, p. 467; Crilly, p. 473.

of the labels of one brand of whisky, the proprietors of which have been active in prosecuting and giving publicity to those infringements.¹ As remedies for these frauds, it is recommended that a penalty of fine and imprisonment be imposed for the sale of liquors under misleading brands, and that the ingredients be stated on the labels, though without giving the entire formula.²

Cordials and liqueuers, which are extensively manufactured in the United States, are said to be put up under foreign names, except in the case of one establishment which uses its own name.³

Some of the makers of wines and cordials desire legislation requiring all labels to show the true place of origin of the wine, whether champagne is genuine or artificially carbonated, and in the case of cordials, whether they are diluted or not, made from herbs and fruits or otherwise, and artificially preserved or not.⁴ The makers of carbonated champagne, however, object to the use of the words "artificially carbonated," or other similar expressions, lest people should think the champagne artificial in the sense of being medicated; and it is suggested that if champagne made by the old process were required to be labeled "fermented in the bottle," the effect would probably be to injure both kinds of American champagne and increase the sale of foreign brands.⁵ A distinction is also made between the use of names which have become generic, though originally indicating the place of origin, and labels intended to deceive the purchaser.⁶

Physiological effect of alcohol.—A leading authority on physiological chemistry states that a certain quantity of alcohol, like an after-dinner cup of coffee or a proper amount of salt, facilitates digestion, but that in large quantities it produces an inflammation of the mucous membrane of the stomach.⁷

FLAVORING EXTRACTS AND SODA-WATER SIRUPS.

Vanilla and lemon extracts.—Most of the flavoring extracts on the market are said to be artificial products made with chemical ethers. Vanilla extracts are made of an artificial substance called vanillin, obtained from oil of cloves, or of cumarin from the tonka bean. Vanillin is considered a valuable flavoring substance, but cumarin has marked poisonous effects when used in large quantities; yet it is said to be present in nearly all the cheaper grades of extracts. For coloring matter, brown sugar or prune juice is used. In the cheaper lemon extracts there is a very slight amount of oil of lemon, the flavor and odor being due chiefly to an extract of ribbon grass.⁸

Soda-water sirups.—Especially in the sirups used for flavoring soda water is the use of artificial compounds practiced. It is estimated that the chances are five to one against getting a fruit sirup at a soda fountain. The artificial sirups are more convenient to handle than the fruit flavors and will keep indefinitely. They are not considered injurious to health in minute quantities, but it is complained that their use is a fraud and an injury to the fruit interests. Saccharin is sometimes used in place of sugar for sweetening, and aniline dyes are used; perhaps not in sufficient quantities to make a single glass of soda water injurious to health, though one witness has found enough dye in a single glass to give a brilliant color to a piece of flannel 4 inches square. It is charged that a variety of substances said to be poisonous are used in coloring soda-water sirups.

¹ O'Reilly, p. 465.

² Sadler, p. 397; O'Reilly, pp. 461, 462.

³ O'Reilly, p. 464.

⁴ Emerson, pp. 503, 507, 508; Wheeler, p. 522; Hildreth, p. 512; Cook, p. 520; Rheinstrom, p. 427.

⁵ Werner, p. 579; Ripen, p. 578.

⁶ Hochstatter, pp. 469-472.

⁷ Chittenden, pp. 420, 421.

⁸ Vaughan, p. 204; Mitchell, pp. 118, 127-131.

Flavors and colors in other temperance drinks.—Temperance drinks in general are said to be extensively colored with aniline dyes and flavored with artificial flavors.

Legal remedies.—The labeling of artificial sirups as such is demanded on behalf of the fruit interests. In the administration of the Wisconsin food law, artificial flavors are not permitted as a rule, except where the genuine extract can not be commercially made.¹

COLORING MATERIALS.

In general.—The use of coloring materials to improve the appearance of foods is said to be of physiological importance, in that the sight of attractive food not only makes the mouth water, but also increases the activity of the stomach, liver, and pancreas. It is said, however, that the general object of coloring matter is to enable an inferior food to be sold in place of a better one.²

Mordants in vegetables.—In the case of canned vegetables the green color is fixed by the use of mineral substances, principally zinc and copper compounds, which are poisonous, but are used in such small quantities that they are not harmful to most healthy stomachs; though a weak digestion may be upset by a very small amount.³

Aniline dyes.—The aniline oil used as a coloring matter is obtained from coal tar, and it has a variety of hues, so that it is said to be taking the place of vegetable coloring matters not only in butter and its imitations, but also in confectionery, jellies, preserves, and wines.⁴

Some of the aniline colors, as methylene blue, are usually harmless; while others, as vermillion red, are said to be slightly poisonous. Some of the aniline colors contain arsenic as an accidental impurity, but the better grades are not made by the arsenic process and are guaranteed to be free from arsenic.⁵

Colors in confectionery.—The use of coloring matter is considered of especial importance in confectionery, the manufacturers of which pay considerable attention to the production of pleasing tints. Poisonous coloring matters, such as chromate of lead, have been used for this purpose, but since publicity has been given to the matter the use of poisonous colors has been almost or quite discontinued, and their place taken by aniline dyes, or in the great majority of cases by harmless vegetable substances.⁶

Proposed legislation.—It is proposed by some of the expert witnesses that the use of coloring matters be either prohibited altogether or at least declared on the label.⁷ Another suggestion is that the Government should specify the coloring matters which may be used, especially in butter and its substitutes and in confectionery.⁸

The use of injurious coloring materials, including, perhaps, aniline dyes in confectionery, and especially copper and zinc colors in canned vegetables, is thought by some to require prohibition. Dr. Wiley says that when chemicals are used to fix the chlorophyll in vegetables, the fact should be stamped upon the package, as with many people the least amount of these chemicals upsets the digestion.⁹

¹ Wiley, pp. 57, 58, 585; Jackson, pp. 473-475; Duff, p. 498; Jenkins, p. 458; Mitchell, p. 134; Edwards, p. 228.

² Wiley, p. 42; Vaughan, p. 208; Prescott, p. 199.

³ Wiley, p. 42.

⁴ Mitchell, p. 115; Delafontaine, p. 229; Piffard, p. 191.

⁵ Billings, p. 249; Piffard, pp. 191, 192; Mitchell, p. 181.

⁶ Wiley, pp. 80, 81.

⁷ Prescott, p. 199; Mitchell, p. 120; Piffard, p. 188.

⁸ Vaughan, p. 208; Prescott, p. 200.

⁹ Wiley, pp. 31, 42; Billings, p. 249; Chittenden, pp. 422, 425.

PRESERVATIVES.

Various modes of preserving food.—Decay in organic substances, which was formerly supposed to be produced by oxidation, is now known to be due to the working of decomposing germs or ferments. Anything which either kills these germs or suspends their action, therefore, acts as a preservative. Four general methods of preserving foods are enumerated: (1) Sterilization by heat, which kills the germs but not the spores, so that two applications of heat are required for safety; (2) refrigeration, which suspends the activity of the ferments for the time being, as long as the low temperature continues; (3) drying; (4) the addition of some antiseptic substance which paralyzes the ferments. There are two general classes of antiseptics: The first class consists of such substances as are themselves foods and are absorbed as the preserved food is digested, such as alcohol, sugar, and vinegar; salt and certain spices are also classified with these preservatives which are beneficial rather than harmful in ordinary quantities, because they promote the absorption of food. The second class of antiseptics consists of substances which do not enter into the animal economy.¹ Among those most commonly used as preservatives are salicylic acid, borax and other boron compounds, and formaldehyde or formalin; saccharin, sodium fluoride, and various sulphites and other chemicals are also used to a greater or less extent.

Physiological effects of antiseptics.—Any agent which paralyzes the ferments which produce decay may be expected to interfere to a greater or less extent with digestion by lessening the activity of the ferments by which digestion is accomplished; and there are many authorities who consider that antiseptics are for this reason necessarily injurious to the health.² Among the other charges which are brought against antiseptics are that they encourage the sale and use of inferior food, or food which may be upon the point of turning sour, by improving its apparent but not its real quality, and that their use leads to carelessness in the application of other means or preservation, such as sterilization. It is also remarked that while only a small amount of any antiseptic is taken in any one food, the use of preservatives is so general that in the aggregate a considerable quantity may be taken into the stomach.³

It is not denied, therefore, that the ideal food is that which is fresh and requires no preservation; but under actual modern conditions the use of antiseptics is regarded as necessary, and more desirable and hygienic than the use of food in which decomposition or the generation of ptomaines or other poisonous substances has begun. Even where refrigeration is practicable, its superiority to the use of antiseptics is questioned.⁴ The outcry against the use of antiseptics is attributed to a prejudice, resulting, perhaps, from their improper use in milk, which should be kept absolutely pure.⁵ A distinction is made between cumulative poisons, such as lead or mercury, and the substances ordinarily used as preservatives, which are thought to be practically harmless in quantities which do not produce immediate physiological effects.⁶ It is even maintained by some physiologists that antiseptics in small quantities do not necessarily interfere with digestion, and that salt and boracic acid at least may even hasten the digestive processes.⁷

The differences of opinion existing on this subject seem to be due partly to the scarcity of competent physiological chemists and to the consequent lack of definite experimental knowledge. Professor Atwater and Professor Chittenden

¹ Wiley, pp. 43, 44; Lewis, pp. 33, 34.

² Mitchell, pp. 111, 112; Wiley, pp. 45, 46; Prescott, pp. 196, 196.

³ Prescott, pp. 196, 201; Vaughan, pp. 208, 204; Mitchell, 118, 116, 183.

⁴ Haines, pp. 283, 284; Edwards, p. 286; Billings, pp. 248, 249.

⁵ Delafontaine, p. 232; Knight, p. 251.

⁶ Eaton, p. 255.

⁷ Chittenden, p. 419, 421; Billings, p. 246; Allport, p. 257.

are mentioned as eminent and experienced men in this line of work, and a younger school is said to be coming forward, but the members of it are unfortunately few.¹ Moreover, the whole question is complicated by the differences existing in individuals, which make it safe for one person to use an amount of a given substance which in another individual would act as a more or less violent poison. Each individual is able to determine more or less definitely by experience what foods do or do not agree with him, but the use of preservatives and other unsuspected adulterations without notice to the consumer makes this test untrustworthy.²

Proposed legislation.—It is thought that this difficulty would be overcome by requiring plain labels on all preserved foods, giving notice as to what preservative is used, and that this should be done at least in the case of antiseptics which are not evident to the taste or smell.³ The only objection to this proposed requirement comes from a manufacturer, who argues that the poorer classes would be afraid to use foods so labeled, or backward in buying them, and that great damage to the country in general and the manufacturing industries in particular would result. He is in favor of prohibiting deleterious substances, however.⁴

Attention is called to the prohibition of certain preservatives, such as saccharin and salicylic acid, in European countries, and to the Wisconsin law forbidding the use of boracic acid in milk.⁵ Certain experts are in favor of prohibiting salicylic acid and perhaps some other antiseptics;⁶ and it is suggested that a board of high medical authorities be constituted to pass upon the wholesomeness of the antiseptics used.⁷

Formaldehyde.—Formaldehyde, or formalin, which is made from wood alcohol by extracting the hydrogen, is used extensively in weak solutions to prevent the souring of milk. It is sometimes sold under such fanciful names as "milk sweet" and "freezine," and at prices many times the cost of the material. It is also used in some cases for preserving fruit, liquors, and other foods.⁸ Formaldehyde, or formic aldehyde, is said to be an active poison and to interfere with digestion in the same manner as other antiseptics. It is therefore considered injurious, or at least a doubtful agent which it is well to avoid, even in weak solutions.⁹ On the other hand, it is thought by one chemist and by a manufacturer of preservatives to be harmless in the very diluted form in which it is used in milk, and even beneficial in cases of sour stomach and cholera infantum.¹⁰

Borax and boracic acid.—Borax and boracic acid are used as preservatives in milk, butter, and meat. It is charged that their use in milk is usually for the purpose of covering up inexcusable shiftlessness in handling the milk.¹¹ They are used to some extent as preservatives in butter intended for export to England, the English importers demanding a preservative in butter, perhaps because of the conservatism which has prevented the general use of refrigerators in that country. Butter sent to England from Australasia, Argentina, and France is said to be universally preserved with boron compounds, and their more general use in American butter intended for export is strongly urged as the only means of competing successfully with other butter-producing countries.¹² On the other hand,

¹ Austen, p. 587; Delafontaine, p. 288.

² Jenkins, pp. 449, 454.

³ Wiley, pp. 44, 53, 184; Jenkins, p. 454; Prescott, p. 196; Billings, p. 247.

⁴ Heller, pp. 181, 182.

⁵ Wiley, pp. 44, 52, 58.

⁶ Prescott, 196; Vaughan, p. 204.

⁷ Hallberg, p. 81; Billings, p. 247; Thurber, p. 582.

⁸ Wiley, pp. 45, 171; Mitchell, p. 112; Heller, p. 186.

⁹ Piffard, p. 191; Prescott, p. 196; Billings, p. 248; Allport, p. 280; Edwards, p. 286.

¹⁰ Mitchell, p. 112; Heller, pp. 171-186.

¹¹ Adams, p. 209.

¹² Knight, pp. 168-170, 243, 244, 250-252; Henshaw, p. 266.

it is pointed out that butter containing boracic acid is not admitted into any European country except Great Britain and France, nor into several of the South American countries, and that the use of boracic acid would therefore destroy the sale of American butter in many foreign countries. It is also said to be a poor preservative, and unnecessary in butter.¹

A few witnesses consider boron compounds injurious, and one of them submits an extract from a medical journal describing two distinct forms of poisoning from boric or boracic acid, one of which may occur as a result of its continued use in food.² The preponderance of evidence, however, is to the effect that boron preservatives are harmless as ordinarily used.³

The principal use of borax as a meat preservative is on meats for export, though it has been found in considerable quantity in sausages, and sometimes in chickens shipped long distances in this country. Hams and other meats intended for export are simply rolled in borax after being cured or partly cured with salt or saltpeter. The borax is said not to penetrate to any great extent into the meat, and to be brushed off after the meat reaches its destination. The application of borax in this manner is regarded as necessary by exporters in order to keep the meat in good condition without the use of an amount of salt which would render it unpalatable.⁴

Other methods of preserving meat.—The principal other meat preservatives mentioned are sulphur, sodium sulphite, which sometimes masquerades as "freezem" or "new method meat preserver," salt, and saltpeter. The object of smoking meat is said to be to give it a flavor and color, not to cure it.⁵ The use of sulphur is recommended as next in value to treatment with boracic acid, and preferable to the use of either formalin, salicylic acid, carbolic acid, or corrosive sublimate.⁶ Sodium sulphite is claimed by a manufacturer of preservatives to be absolutely healthful in small quantities, but other witnesses appear to regard its use as undesirable.⁷ Salt is considered salutary in ordinary amounts, but both salt and saltpeter have been found to be injurious and even dangerous to life in excessive amounts. Saltpeter is regarded as more deleterious to health than either common salt, borax, or bicarbonate of soda, having a tendency to produce degeneration of muscle and an injurious effect upon the kidneys.⁸ Refrigeration is recommended as an excellent means of preserving meat, when an even temperature can be maintained and the meat consumed as soon as it is taken out of cold storage; but attention is called to the danger of tainting after removal from the refrigerator.⁹

Salicylic acid.—Salicylic acid, which is said to be used more than any other antiseptic, is considered by many authorities to be injurious even in small quantities, at least to some individuals. It is thought to be injurious to the organs of secretion and to the mucous membrane; it is also said to disturb the digestion, depress the heart and the respiration, congest the lungs, and irritate the kidneys. It is considered capable of producing convulsions in infants, and cases are reported in which death was apparently due to the depression of the heart caused by its use.¹⁰ One authority, however, considers it less objectionable than other antisep-

¹ North, pp. 476-478; Delafontaine, p. 288.

² Duncan, pp. 47, 48; Piffard, p. 191; Prescott, p. 200; Adams, p. 209.

³ Delafontaine, p. 288; Stringfeld, p. 282; Chittenden, pp. 421, 422; Billings, pp. 244-246, 250; Allport, pp. 256-259, 260; North, p. 477; Henrotin, pp. 264, 265; de Schweinitz, p. 614; James, pp. 267, 268-269, 279; Edwards, pp. 287, 289; Haines, pp. 284, 286.

⁴ Edwards, pp. 288, 289; Jenkins, p. 450; Lunham, pp. 289-242; Ellsworth, pp. 253-255.

⁵ Mitchell, pp. 113, 114; Heller, pp. 179, 180.

⁶ Allport, p. 260.

⁷ Heller, p. 178; Mitchell, p. 188; Prescott, p. 200.

⁸ Billings, pp. 245, 247; Haines, p. 284; Edwards, pp. 286, 287; Heller, p. 179.

⁹ Allport, pp. 260, 261.

¹⁰ James, p. 268; Prescott, pp. 195, 196; Chittenden, pp. 421, 425; Edwards, p. 286; Vaughan, p. 204; Stringfeld, p. 282; Heller, p. 178; Thurber, pp. 581, 582.

tics, while two or three others think it harmless in the very small quantities ordinarily used.¹ Salicylic acid is often used in beer, wine, and other beverages, including grape juice and cider;² but cider is said to be preserved chiefly with fluoride of ammonia or soda, which on decomposition forms hydrofluoric acid, the only acid which is too powerful to be kept in glass bottles.³ A compound of salicylic acid, salicylate of soda, and phosphate of soda is made for use in canning fruit, and furnished to owners of orchards, who use it in putting up their fruits without knowing its composition.⁴

Preservatives in beer.—Many brewers and others testify that antiseptics are not now generally used in beer, having been rendered unnecessary by the use of pasteurization and ice machines.⁵ Several witnesses, however, testify that salicylic acid, bisulphite of lime, and other preservatives are used in beer for export and for distant shipment.⁶ Beer imported from foreign countries is also said to contain preservatives.⁷ One importer, however, asserts that the beer he gets from Munich contains nothing but malt and hops, and similar claims are made for certain ales and stouts from England and Ireland.⁸ Of 15 samples of beer bought in New York, at least half of which were foreign, 4 only were found to contain salicylic acid, 2 of the 4 being foreign and 2 domestic beers. It is thought that the use of salicylic acid has been largely discontinued since attention was called to its harmfulness in the Agricultural Department's report on beverages.⁹

DRUGS.

The committee took very little testimony on the subject of drugs, but some testimony was given to the effect that the adulteration of drugs had been carried on to a great extent in this country. This seems usually to have been done for the purpose of cheapening them by reducing the strength; but even this kind of adulteration is condemned as dangerous in the case of drugs. Others are said to be not properly purified. Such commonly used articles as household ammonia, root beer, so-called cherry phosphate, etc., are said to be the kind of drugs most adulterated. Powdered coal dust is said to be sold for black antimony almost exclusively. Bromo seltzer is said to be made with acetanilide, a poisonous substance, in place of bromide of potassium.¹⁰

Two witnesses remark that the Government has already done a great deal to prevent the importation of adulterated drugs,¹¹ and the hope is expressed that something will be done in the case of drugs of home manufacture. It is suggested that when proprietary articles contain substances which are poisonous in an overdose purchasers should be warned.¹²

GENERAL DESIRE FOR A NATIONAL FOOD LAW.

Many of the witnesses are convinced of the insufficiency of State legislation to regulate the purity of food. The chief objection, especially from the standpoint

¹ Tucker, p. 435; Delafontaine, p. 232; Billings, p. 248; Schwartz, pp. 369, 372, 373.

² Wiley, pp. 44, 45; Billings, p. 248.

³ Hallberg, p. 85.

⁴ Mitchell, pp. 115, 116.

⁵ Thomann, pp. 356-359; Pabst, p. 312; Oehne, pp. 294, 296; Fecker, p. 298; Plautz, pp. 300, 301; La Touche, pp. 544-546; Busch, pp. 488, 489; Evans, p. 417; Hachemeister, p. 416; Roche, p. 414; Wyatt, pp. 406, 407; Bauer, p. 390; Lippe, pp. 381, 384, 385; Kruesler, pp. 377, 378; Hupfel, p. 379.

⁶ Wigan, pp. 375, 376; Brown, p. 336; Wackenhuth, p. 412; Mitchell, p. 116; Schwartz, pp. 367, 368, 369, 372; Zeltner, p. 456.

⁷ Wyatt, p. 407; Plautz, p. 300; Thomann, p. 358.

⁸ Eitel, p. 290; La Touche, pp. 544-546; Roche, p. 414.

⁹ Wiley, pp. 45, 584.

¹⁰ Hallberg, pp. 84-86; Piffard, pp. 194, 196; Mitchell, p. 124.

¹¹ Hallberg, p. 83; Piffard, p. 93.

¹² Frear, p. 484.

of the manufacturer, to leaving the matter in the hands of State governments is the lack of uniformity in State laws, which makes necessary different kinds of labels according to the State to which the goods are to be shipped. It is also urged that the State laws are insufficient from the lack of the appropriations necessary to enforce them, and through the lack of sufficient knowledge and efficiency on the part of the officials charged with their enforcement. Moreover, it is pointed out that the State laws are enforced mainly against the retailers, who may themselves be victims of deception, and that goods brought from another State and sold in the original packages can not be reached by State legislation.¹

There seems, therefore, to be a general agreement both among the manufacturers and among others who express any opinion on the subject that national regulation is necessary or desirable. In the most common form which the proposals for legislation take, the principal thing sought for is the requirement that foods shall be honestly labeled and sold for what they really are. Manufacturers would apparently be willing to label their goods properly if their competitors were required to do the same.² In the case of injurious substances, however, and in the case of compounds containing materials no one would knowingly use, correct labeling is considered insufficient and prohibition necessary.³ A number of authorities favor the establishment of a national commission or board of health, with power to fix regular standards for food products, and perhaps guarantee the quality of products coming up to the standard required,⁴ though two witnesses consider it undesirable for the Government to guarantee the purity or quality of particular food products.⁵ It is suggested that the proposed commission should be either under a department of commerce or under the existing Department of Agriculture. The Brosius bill, which is patterned after the English law and is said to be essentially the plan approved by the agricultural chemists in 1897 and in a modified form by the National Pure Food and Drug Congress in 1898, is advocated by one witness on the grounds that it avoids the tax feature and places the administration in offices already established, and that general legislation is preferable to piecemeal regulations.⁶

It is doubtful how far the National Government has power to go in regulating food products, but it is pointed out that it can at least do much toward preserving the reputation of American goods abroad, prevent the importation of misbranded and adulterated goods, legislate generally so far as concerns the Territories, the District of Columbia, and foods sent from one State to another, and thus establish a basis or model for more uniform State legislation.⁷

¹Stewart, p. 73; Scully, pp. 93, 94; Piffard, pp. 193, 194; Tucker, p. 433; Frear, p. 529; Mitchell, p. 123.

²Wiley, pp. 53, 587, 588; Monred, p. 65; Hanney, pp. 59, 60; Furbay, p. 62; Wise, p. 627; Delafontaine, p. 231; Berry, p. 97; Mitchell, p. 111; Hobbs, p. 496; Piffard, pp. 187, 192; Stewart, p. 79; Rosati, p. 44; Scully, pp. 93, 94.

³Thurber, pp. 581, 582; Piffard, p. 191; Mitchell, pp. 118, 124.

⁴Lewis, pp. 36-39; Hallberg, pp. 80, 81, 87; Chittenden, pp. 418, 419, 422, 426; Tucker, pp. 436, 438, 439; Piffard, pp. 187, 188; Vaughan, pp. 206, 207; Wiley, p. 39; Billings, p. 247.

⁵Mitchell, pp. 124, 131, 132; Tucker, p. 437.

⁶Frear, pp. 526, 527.

⁷Mitchell, p. 122; Adams, p. 207; Frear, pp. 529, 530.

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DIGEST OF TESTIMONY.

I. PURE AND IMPURE FOODS.

A. Pure foods.—Mr. HANNEY says that when he first came to this country, twelve or thirteen years before the date of his testimony (1899), he traveled all around the United States in search of pure foods, and discovered that English, German, and French manufacturers were well known to the people and that there were scarcely any American goods for sale. He mentions especially Cross & Blackwell, the Dundee Marmalade Company, Black & Son, and French manufacturers of peas, mushrooms, and asparagus. There was no such thing known in this country as high-grade asparagus or peas. There were one or two manufacturers in New York State putting up these articles in a small way, but there were none so good as the English, French, and Germans put up. There are now about 30 manufacturers in this country even better than the English, French, and German companies. Formerly the English, French, and German goods were the only ones that were known and truthfully labeled, though a few small American firms produced honest goods. (63, 64.)

Mr. FURBAY, connected with the Hazel Pure Food Company, of Franklin Park, Ill., feels that there is unfair competition with adulterated goods. He says very few business men in Chicago appreciate the pure-food question from a commercial standpoint, but that his company acts upon the principle that there is more money to be made out of pure foods carefully prepared and honestly labeled than out of adulterated products. He has striven to improve the health and welfare of the company's patrons by giving absolutely pure articles in competition with cheaper grades. He thinks his company can produce the goods and sell them at a larger profit even when some one else is selling goods containing illegitimate adulterations. He feels that all goods ought to be honestly labeled, but not always with the formula. He defines pure food as food containing no deleterious substance, and sold for what it is. Flour mixed with corn, if it is so stated, is a pure product; if it contains alum it is impure. (60, 61.)

Mr. Furbay says that Cross & Blackwell and other English firms, selling pure food properly labeled, drove American manufacturers out of the American market, although the Americans were producing the goods more cheaply. American manufacturers are now introducing a food of higher grade than can be imported. He accounts for the change in the character of American goods by saying that we have advanced in our general national character, and honesty has been found to be the best policy. The Hazel Pure Food Company wants to put out honest articles properly labeled because there is more money in it. Witness thinks business men will all come to see that. He supposes that the goods of Cross & Blackwell, and some other English manufacturers of preserves and marmalade, still top the market, because they are widely advertised and better known than others now placed on the market by such companies as his own. (62, 63.)

Mr. HANES, a salesman for the Battle Creek Health Food Company, says that most of the products of his company are ready cooked. He believes that no preservatives whatever are used, not even salt. Some of the foods consist of preparations of wheat and other grains, and others of nuts, either by themselves or combined with cereals and fruits. A full line of crackers and biscuits is offered in which no baking powder, soda, or lard is used. No animal fats are employed. A peanut butter is used, made by roasting and grinding peanuts. (261-264.)

Mr. BERRY says perfectly sound fresh fruit is bought in the market and put up in hermetically sealed cans. The time to buy the fruit is when there is a flood in the market, and the best fruits can be bought at a nominal price. (101.)

B. Extent of adulteration.—Dr. WILEY says that he has been reported by the newspapers as having stated that 95 per cent of all foods in the United States

were adulterated. What he did say was that probably 95 per cent of food products had been adulterated at some time or other in some country or other. (585.)

Dr. Wiley testifies that adulteration with materials deleterious to health is by no means so extensive as merely fraudulent adulteration. There is scarcely any article of human food which has not at some time in some country been adulterated, but the actual amount of adulteration in the market is very small. Of 100 food articles bought at random, other than ground spices or ground coffee, scarcely 5 per cent would be adulterated. Adulterations injurious to health are confined mostly to (1) coloring materials and (2) preservatives. (41.)

Professor FREAR, of the Pennsylvania Agricultural College, says that in his investigations he has found very little adulteration of food which could be distinctly asserted to be injurious to health in the quantities in which the materials are commonly used, unless it be from the cumulative effects that might result from the continuous use of such materials. Continuous use might produce positive injury, particularly in the case of persons with rather weak digestion. He refers particularly to the use of coloring matters of mineral origin and coal-tar colors. (481.)

Professor JENKINS, of the Connecticut agricultural station, says that food adulteration in Connecticut has increased with competition and the demand for cheaper goods and the necessity of utilizing waste products. Cocoanut shells and the hulls of peas are mixed with spices, and prune stones with coffee. The adulteration which is obviously injurious to health has, however, decreased, on account of the increased activity of the health officers and inspectors. Existing adulteration is chiefly injurious in demoralizing honest trade and working frauds on the consumer. In the four years' experience of the Connecticut station only a single adulterant has been found which is distinctly a poison. That is Marsh's yellow, a dye which is used in very small amounts in the adulteration of mustard. (449.)

Mr. MURRAY admits that the term "commercial" usually means something adulterated. (71.)

C. Injurious effects of fraudulent adulterations.—Prof. VICTOR C. VAUGHAN, dean of the medical faculty of the University of Michigan, says it is quite impossible to separate those adulterations directly detrimental to health from those which are simply pecuniary frauds, because an adulteration which may be undertaken for pecuniary gain will often injure health. (202.)

Professor PRESCOTT's opinion is that the substitution of one harmless food for another unknown to the consumer is a sanitary offense, for what is a wholesome food for one man is not wholesome for another. From the extreme complexity of the digestive processes and the highly organized condition of the human body, it becomes impossible to determine by chemical analysis precisely what food would be the most favorable to digestion and harmless for a given individual. People find out by experience what food is beneficial to them, but if substitutions unknown to the consumer are permitted that experience goes for nothing. (197, 198.)

D. Various kinds of adulteration distinguished.—1. Adulteration, sophistication, substitution.—Professor HALLBERG differentiates adulteration, sophistication, and substitution, direct substitution being the most important. He knows there is an immense amount of adulteration that should be stopped. (88.)

2. Compounds.—Professor MITCHELL, chemist to the Wisconsin dairy and food commission, distinguishes two classes of compounds: (1) Legitimate compounds, such as pancake flour, made of certain flours each of which is suitable for a pancake flour and adds to the value of the compound, making a mixture of a certain consistency and desirability. He classes breakfast foods also as legitimate compounds. (2) Additions for the sole purpose of diluting and increasing the bulk and weight, as in the case of pepper. In this case the consumer gets less pepper for his money than if he bought pepper at the full price and diluted it himself. Only the middleman and the jobber get the benefit of diluting with substances belonging to other classes of food.

Professor Mitchell thinks that where the foods are of the same class and one is a prepared substitute for the other, taking its place as food, the compound is permissible, but where the adulterant is simply to dilute, as water in milk or flour in pepper, the compound is not permissible. (118, 119.)

3. Antiseptics.—Professor JENKINS states that the Connecticut agricultural station classes anything as adulterated which contains salicylic acid or other modern antiseptics. (461.)

4. Tests for adulteration.—Dr. PIFFARD says the chemist is able to determine many adulterants very readily, but there are many others, such as mixed flour, which chemistry almost fails to determine, but which are readily determined by the microscope, and others, such as coloring matters, which are more readily and quickly determined by the spectroscope. (192, 193.)

E. Contaminated food.—1. Filth.—Dr. SCOBELL, president of the Society for the Promotion of Health, considers the subject of adulterated food a vital one, but that of contaminated food greater. The observations of this witness have been made in reference to the way foods are kept on sale. Breadstuffs in most small groceries are kept outside of dirty cases on shelving, the resting place of flies and dust. Bread, cookies, cakes, and crackers should be covered; bread should be covered with tissue paper. In this connection the witness mentions also dried fruits kept in open boxes; tea, coffee, and spices; milk, cheese, lard, and butter kept uncovered and near sinks; candy kept in uncovered pails, boxes, or baskets; figs, dates, and small fruits kept in open boxes; also cooked and salted meats and fish, and all foods not usually washed before use; uncooked meats kept on uncovered counters, open to the handling of passing crowds; vegetables and fruits exposed to dust from careless sweeping of stores, to atmospheric impurities, and to powdered filth from beasts and from the expiration of man. Housewives frequently complain of the hands of clerks in markets and groceries, as where their gory hands are not washed before cutting a steak. Witness pleads for an improvement in the care of food, and says the committee would do well to start a reform in the handling of food, and that the grocers and dealers obeying the committee's suggestions would have the hearty indorsement of women generally. Unless a reform is instituted witness predicts that women will center their entire patronage with the few meat dealers who are required by the laws of their church to keep themselves and their meat absolutely clean. The witness has found a case where tuberculosis was caused by eating meat from an animal killed by a shock on the head. Animals should be killed by letting off the blood. (51.)

Dr. SCOBELL has frequently seen milk with particles of filth on top, and says this should be reformed immediately and the animals taken care of. (52.)

Dr. WILEY says the care and cleanliness of the animals is as important to good butter as its handling in the market. Many dairymen neglect the cleanliness of the cows. (52.)

2. Lead poisoning.—Dr. WILEY says that poisonous and deleterious substances are often put into sterilized vegetable products by accident. The solder used for sealing cans is an alloy composed mainly of lead and tin, both of which are poisonous. Little pellets of solder dropped in during sealing are acted upon by the acids of the vegetables or fruits, forming soluble salts of lead and tin. Tin plate, which is sheet iron washed with tin, is often adulterated; the witness has found as high as 13 per cent of lead in it, and says the use of such materials for packages should be prohibited. It is almost impossible to get tin free from lead, but the amount of lead should be regulated, as an excess of it causes a kind of poisoning known as painter's colic. Germany has a law regulating the amount of lead which may be present. For protecting metal from oxidization when the iron is applied in soldering many things are used, muriatic acid being one of them; it is applied with a cloth, which is often dirty, and often a drop, or sometimes more, of the acid runs into the food. (42, 43.)

Mr. WILLIAM S. EDWARDS, of Chicago, a dealer in mineral water, testifies that siphons containing lead have caused an immense amount of suffering throughout the country in the form of rheumatism and neuralgia, owing to lead poisoning from highly carbonated water being used through such siphons, where people suppose the siphons are block tin instead of lead. They are principally composed of alloys of lead and pewter, and highly carbonated water in passing through them acquires poisonous properties. At the World's Fair Mr. Edwards discovered 20 different alloys of block tin in use. He says the death of Dr. Robinson, at Hornellsville, N. Y., was caused by the use of water from siphons containing lead. (238.)

F. Pure-food movements.—1. National Pure Food and Drug Congress.—Professor FREAR says that a body called the Association of Agricultural Chemists of the United States was organized in 1884. It is composed chiefly of chemists of the United States Department of Agriculture, the United States Bureau of Internal Revenue, and the several colleges and agricultural experiment stations organized under the acts of Congress of 1882 and 1887. In 1895 this body appointed a committee to consider what national legislation was desirable upon the subject of pure foods. In 1897 the committee presented a draft of a bill, and soon after the Hon. Marriott Brosius introduced into the House a bill of substantially the same character. A little later a committee of citizens of the District of Columbia formulated a plan for a national conference of the interests specially affected by such legislation, and such a gathering was held in January of 1898. There were present representatives appointed by the heads of five of the national executive departments, by the governors of 15 States, by about 15 national trade, chemical, and health associations, and by a large number of State and local organizations.

At this conference a permanent organization was effected under the name of the National Pure Food and Drug Congress. (526, 527.)

2. Society for the Promotion of Health.—Dr. R. KENNEDY SCOBELL, a lecturer on health, employed by a firm of wholesale dealers in proprietary remedies, and president for the Society for the Promotion of Health, says that at each meeting of the society there are demonstrations of pure food, and women are instructed in the choice of foods. The club regards pure food as essential to health. (50-52.)

3. Effect of agitation upon exports.—Mr. HELLER thinks the agitation of the food question, which affects nearly all the manufacturers, will hurt our exports, because it will be believed that our foods are to a great extent adulterated. One of the largest plants in the country runs only three days in the week now (May, 1899); and one of their salesmen, in traveling over his territory, sold only 7 gross of cans, though he had formerly always sold a carload on the same trip. Mr. Heller calls attention to Secretary Wilson's remarks that the agitation in regard to meat will in time cost the country more than the war with Spain, owing to the injury done to the meat industry. (181, 182.) See also *Enforcement of the mixed-flour law, effect upon exports*, p. 28.

II. MIXED FLOUR.

A. Adulterants used.—*1. In wheat flour.*—Mr. AUGUSTINE GALLAGHER, president of the Modern Miller Company, says that before the enactment of the mixed-flour law the principal adulterant used was cornstarch made by glucose mills. Another adulterant was corn flour made by the corn mills; and in a few instances barytes was discovered. In Georgia, mineraline or ground clay had been moved from point to point by freight as a commodity, but did not come into general use. He does not think it went farther than 200 miles. The production of an article made from ground clay is quite an industry in Tennessee and Georgia, but he is convinced that the business of adulterating breadstuffs with that material was confined to those two States where the adulterants were produced. (3, 4, 135.)

Dr. WILEY testifies that glucose factories make a high grade of starch known as flourine, which is finely ground and has been extensively used for mixing with wheat flour. (21.)

Professor JENKINS says that the Connecticut Agricultural Station has found no adulteration in any of the hundreds of samples of flour, taken in Connecticut, which it has examined. It has found considerable quantities of corn in one or two samples referred to it from other States. (450.)

Mr. BERNARD A. ECKERT, president of the Eckert-Swan Milling Company, testifies that up to the time of the passage of the pure-flour law his firm had to compete with flour which was not wheat flour, though sold as such. Many millers, and also dealers, mixed cheaper substances with wheat flour, and sold the mixture under their regular brands. This not only injured the honest millers and defrauded the consumers, but also began to militate against the millers in their foreign trade. Shipments of American flour having been inspected in other countries and found to contain foreign substances, the question of laws to exclude American flour, or at least of adopting a rigid system of inspection, was being agitated. (26, 27.)

Mr. FURBAY says patent flour has been discovered by the Agricultural Department to be adulterated with corn. (61.)

In replying to a question whether the cracker and biscuit trusts were using adulterated flour, Mr. GALLAGHER states that he personally inspected two or three bakeries, and found no evidences of adulterated flour, the character of the goods produced there being such that an undue amount of starch would ruin them; but some of the goods produced by the combined bakers would bear more starch than the old-fashioned crackers. (7.)

2. In feed stuffs.—Mr. GALLAGHER has been informed by several members of the trade that mineraline is used in feed stuffs. The adulteration of shorts in this way is very easy. (4.)

3. In starch.—Professor MITCHELL says flourine, a by-product of glucose, has occasionally been used as an adulterant for white starches. (118.)

B. Pancake flour.—Mr. GALLAGHER says the basis of a great many pancake flours is cornstarch or corn flour. Corn flour is corn meal pulverized, and is made by a direct milling process. Cornstarch is made by a process in which an acid treatment is used to separate the starch cells. Considerable evidence was introduced before the Ways and Means Committee of Congress to show that free sulphuric acid remained in the starch. According to the information of people who carry on the business, the sugar and gluten are extracted from the cornstarch. Makers of pancake flour add to wheat flour cornstarch or corn flour, and some put in rice. They all use soda, salt, and tartaric acid for leavening purposes. (186, 187.)

Mr. GEORGE W. SMITH, a flour dealer of Chicago, says pancake flours are all mixed. When the ground buckwheat comes in, in October, it is worth \$8 a barrel. The wholesaler will buy low-grade spring-wheat flour worth about \$1.75, and use 2 barrels of that to 1 barrel of buckwheat, marking the mixture buckwheat flour. If the purchaser asks for pure buckwheat flour he can get it. (154.)

Mr. FURBAY says the Hazel Pure Food Company makes a self-raising flour, known as pancake flour, containing a raising preparation, but not alum. The preparation is a very small proportion of the flour. (62.)

Mr. P. M. HANNEY, a manufacturer of cereal foods at Franklin Park, Ill., says that some of the preparations he manufactures, such as pancake flour, have to be stamped, on account of the ruling that they come within the mixed-flour law. Pancake flour is made of whole-wheat flour, some corn and rice flour, salt, and a little raising preparation—80 per cent being whole-wheat flour. It is not put up to deceive or cheapen, but to make flour more palatable. (59.)

C. Enforcement of the mixed-flour law.—1. Methods.—Mr. GALLAGHER says that in enforcing the mixed-flour law he went to a mill in Kansas which had borne a good reputation, but which he knew had been mixing flour, and found stored on the premises a large amount of glucose starch. The act gives no one power to prevent millers from occupying their premises with adulterants, but he informed the miller that he would take a memorandum of the amount of starch on hand, and the next agent would see if he still had the same amount; if not, he would find out what he had done with it. As a result the miller took out a license, and now mixes flour according to law. (2.)

Mr. Gallagher says that his usual mode of testing flour is by the sense of touch, which will detect excessive starchiness. When in doubt, he would send a sample to the laboratory, where a microscope of 350 diameters reveals the presence of corn granules in the wheat very readily. After that, samples are submitted to the Chemical Bureau of the Treasury Department. (7.)

2. Effectiveness in stopping adulteration.—Mr. AUGUSTINE GALLAGHER, giving the results of his experience while acting as a revenue agent in charge of the enforcement of the mixed-flour law of 1898, testifies that in a number of cases flour has been found mixed with products other than wheat, and not properly stamped in accordance with the law. He believes that since the act took effect no flour in the United States has been adulterated with ground clay (mineraline) or ground stone (barytes). The effect of the act has been to destroy the use of those articles. There have been only one or two cases in which flour was made and offered for sale contrary to law, but a great deal of mixed flour made previous to the enactment of the law was found and was held to be taxable under section 49. (1, 8.)

Mr. Gallagher says the principal corn products are corn flour and starch, the latter being produced by glucose factories. Manufacturers of both these products claim that they are healthful, and in the case of corn flour the truthfulness of the statement is not questioned. Before the enactment of the mixed-flour law they claimed further that where mixing was done their customers were so informed, and the goods were sold on their own merits; that not only the dealers but the consumers, knowing what they were buying, wanted the goods, and that therefore there was no reason for the legislation. The result of the enforcement of the act, however, is that 95 per cent of the people engaged in mixing corn products into wheat flour have retired from that branch of the business; they say that people absolutely will not buy mixed corn and wheat flours when they know it, except the flours in small packages which everybody expects to be mixed, such as buckwheat flour, which is often mixed with from 15 to 20 per cent of wheat flour so that the cake will hold together better when baked. The claims of those who said they could sell mixed flour just as well branded as not branded are answered by their failure to do so. To-day they have absolutely no mixed-flour trade, proving that people want pure flour. The enforcement of the flour act has accomplished more in three months than was ever claimed for it by the most extravagant. It has stopped the adulteration of wheat flour. (5, 186.)

Mr. Gallagher has heard no complaint concerning the law, except (1) in regard to self-raising flours, (2) from the glucose trust, which claims that its business has been hurt, and (3) from the millers of corn, who have lost the special customers for whom the mixing was done. (6.)

Mr. ECKERT thinks that every honest miller and dealer feels that the law has accomplished what was intended, and knows of no other act that has given as general satisfaction. He has not heard of any surreptitious mixing of flour in disregard of the law, except that a Government expert testified that there had been a shipment of 10,000 barrels of flour surreptitiously mixed with mineraline, or terriana, in North Carolina. He attributes the good effect of the law to the requirement that mixed flour must be branded, and says the tax "cuts no figure at all." (27, 28.)

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in the acid matters used to neutralize this soda and free the gas. These acids may be cream of tartar, tartaric acid, alum, acid phosphate of calcium, or any solid acid salt, such as sulphate of sodium. Practically, there are only two classes of baking powders having any great sale—cream of tartar baking powder, now manufactured by the baking powder trust, and the alum and phosphate baking powder. The consumer eating food prepared with cream of tartar baking powder does not take into his stomach one particle of cream of tartar; he eats Rochelle salts. When bicarbonate of soda and cream of tartar react upon each other in the oven, the resulting substances are carbonic-acid gas, which, in escaping, puffs up the dough, and Rochelle salts, the active ingredient of Seidlitz powders. The best cream of tartar baking powder on the market contains about 28 per cent of bicarbonate of soda. To neutralize this quantity of acid 62.6 per cent of cream of tartar is required. This quantity will leave in the food 70 per cent of anhydrous Rochelle salts. A teaspoonful of baking powder weighing about 200 grains and making 14 ounces of bread, or 12 good-sized biscuits, will leave in the food 188 grains of Rochelle salts. When alum and bicarbonate of soda are mixed in their equivalent proportions, there will not be one particle of alum left in the food prepared. All alums are double sulphates of sodium and aluminum, in which the sodium may be replaced by potassium or ammonia, and the aluminum by iron or chromium. With an alum phosphate baking powder of good quality, containing 28 per cent of bicarbonate of soda neutralized with acid phosphate of calcium and sodium alum, about 20 per cent of alum is used, the rest of the alkali being neutralized with acid phosphate. The residue left in the food will be hydrate of aluminum and sulphate of soda resulting from the decomposition of the alum, and phosphate of calcium and phosphate of sodium from the acid phosphate. An alum phosphate baking powder containing 20 per cent of alum will leave in the food about 6 per cent of its weight of hydrate of aluminum, and about 20 per cent of its weight of sulphate of soda. Mr. Rew says there is a violent prejudice in the public mind against alum phosphate baking powder, kept alive by advertising and resulting in benefit to some baking powder manufacturers. All baking powder manufacturers use starch to dilute their mixtures and get the gas percentage they wish. If they used more alum than the soda would neutralize, they would be adulterating or filling their baking powder with alum, and as starch is a very much cheaper substance, no manufacturer would use more than his soda required. It is possible to have powder manufactured which would leave some alum, but Mr. Rew has never found such baking powder. (87-89.)

Professor AUSTEN says that the gist of many of the articles on the baking powder question is that alum baking powders are injurious because the material in them is alum, the inference being that the alum would have the same effect on the human system whether it was taken as alum or taken in the form of food prepared with alum baking powder. In like manner it is often assumed that cream of tartar baking powders are wholesome because cream of tartar is a product of the grape. The question is not whether alum taken in sufficient quantities is poisonous. Cream of tartar produces physiological effects if it is taken in sufficient quantities. But neither cream of tartar nor hydrate of alumina is poisonous in the amounts ordinarily received in food, and neither of them, so far as Professor Austen can discover, produce cumulative effects.

Furthermore, the question is not as to the effects of alum in the case of one baking powder, or of cream of tartar in another, because neither alum nor cream of tartar exists in food leavened with baking powder. The essential constituents of the cream of tartar baking powder are cream of tartar and bicarbonate of soda. Under the influence of moisture and heat a chemical reaction takes place, with production of carbonic acid gas, which, in escaping, produces the leavening effect, and Rochelle salts, which remains as a residuum in the food. If an alum baking powder is used, carbonic acid gas is evolved and escapes in the same way, and the residuum consists of sulphate of soda and hydrate of alumina. The same leavening effect may be produced with bicarbonate of soda and a carefully measured quantity of hydrochloric acid. In that case the residuum is common salt. The question of the harmfulness of alum baking powders is not at all the question of the harmfulness of alum. It is the question of the harmfulness of the residuum of sulphate of soda and hydrate of alumina. (532, 533.)

Dr. Austen, who has been employed by several manufacturers of alum baking powders to conduct special experiments as to the effects of food prepared with such baking powders and to examine the literature of the subject, asserts that the public mind has been prejudiced by the publication of a great many articles in newspapers and journals which were not properly reading matter but paid advertisements. Many of the publications which have printed this matter have made contracts which did not allow them to publish any of opposite tenor. (531, 532.)

Mr. FURBAY thinks the operation of the law has been beneficial. It has removed some of the difficulties of his business. It is the only law he knows of which seems to be at all effective in preventing the importation of adulterated food. (62.)

3. Effect upon exports.—Mr. GALLAGHER testifies that the export trade in wheat flour increased between 24 and 25 per cent during the first three months of the operation of the mixed-flour law. It was claimed by those who assumed to represent the mixers that the enactment of the law would ruin the corn-milling business of the country and injure the small dealers and the corn growers. As a matter of fact, while the wheat flour exports increased more than 24 per cent during August, September, and October, 1898, corn-mill exports increased during those months about 48 per cent as compared with the same months of 1897. (6.)

Mr. Gallagher thought the exports of flour in 1899 would amount to several million barrels more than ever before. At the time of his testimony (May, 1899), the increase had been about 20 per cent. He attributed the increase very largely to the mixed-flour law. (136.)

Mr. Gallagher says that foreign importers of American flour are a unit in admiration of the promptness with which the American people came to the rescue of the flour millers and of the present system of guaranteeing the purity of their goods. He submitted a number of letters received from representative importers of American flour in Great Britain and on the Continent of Europe, testifying that the enactment of the law had improved the trade in American flour by restoring confidence in its purity. (7-11.)

Mr. ECKERTESTIFIES that in 1896 about 10,000,000 barrels of flour were exported, and that since the mixed-flour law went into effect the exports have been very large. He estimated that in 1899 the exports of American flour would exceed 15,000,000 barrels, the increase being due in part to the feeling that under Government supervision flour purporting to be wheat flour is pure wheat flour. (27.)

D. Suggested amendments to the mixed-flour law.—Mr. GALLAGHER advises that the act be amended so as to prevent millers from occupying their premises with adulterants, and by excepting self-raising pancake and buckwheat flours, etc.; also by providing licenses for dealers in mixed flours, so as to compel them to keep records, and by providing a penalty for failure to report business transactions. (2, 8.)

Mr. ECKERTESTIFIES that the mixed-flour law is an excellent law, which ought to remain in force with a few slight amendments, perhaps excluding baking powder in small packages. He suggests that the exception of self-raising flour might lead to the abuse of the law; flour might be put up in packages and called self-raising flour to impose upon the public. (27.)

III. BAKING POWDER.

A. General statements.—Professor MALLET states that four classes of baking powder are used in the United States: First, there are the cream of tartar powders, in which nothing but cream of tartar, bicarbonate of soda, and starch is used; second, alum powders, composed of alum, bicarbonate of soda, and starch; third, the phosphate powders, composed of acid phosphate of calcium, bicarbonate of soda, and starch; fourth, alum phosphate powders, composed of alum, bicarbonate of soda, acid phosphate of calcium, and starch. Nearly all of the powders experimented with by Professor Mallet belong to the last class. (552, 566.)

Professor Mallet asserts that one great danger in the use of alum baking powders is the danger of imperfect manufacture. If either the alum or the soda is not weighed out in the proper proportions, and an excess of alum is used, there will not be enough soda to decompose all the alum, and some unchanged alum will be left in the bread. Probably there is not much danger that this will occur in the case of the large manufacturers; but the simplicity and cheapness of the manufacture have led a multitude of small men, practically ignorant of chemistry, to go into the business, and not much reliance can be placed upon the accuracy of their work, even in weighing.

In an actual experiment with 27 samples, representing 17 alum baking powders, Professor Mallet found an excess of soda in all cases but two. In the two powders which showed an excess of acid the acidity was in part due to acid calcium phosphate.

In addition to the dangers of the use of wrong proportions in the materials, there is the danger of imperfect mixture, which would result in an excess of alum in some portions of the powder and an excess of soda in others. (551, 552, 559.)

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in the acid matters used to neutralize this soda and free the gas. These acids may be cream of tartar, tartaric acid, alum, acid phosphate of calcium, or any solid acid salt, such as sulphate of sodium. Practically, there are only two classes of baking powders having any great sale—cream of tartar baking powder, now manufactured by the baking powder trust, and the alum and phosphate baking powder. The consumer eating food prepared with cream of tartar baking powder does not take into his stomach one particle of cream of tartar; he eats Rochelle salts. When bicarbonate of soda and cream of tartar react upon each other in the oven, the resulting substances are carbonic-acid gas, which, in escaping, puffs up the dough, and Rochelle salts, the active ingredient of Seidlitz powders. The best cream of tartar baking powder on the market contains about 28 per cent of bicarbonate of soda. To neutralize this quantity of acid 62.6 per cent of cream of tartar is required. This quantity will leave in the food 70 per cent of anhydrous Rochelle salts. A teaspoonful of baking powder weighing about 200 grains and making 14 ounces of bread, or 12 good-sized biscuits, will leave in the food 188 grains of Rochelle salts. When alum and bicarbonate of soda are mixed in their equivalent proportions, there will not be one particle of alum left in the food prepared. All alums are double sulphates of sodium and aluminum, in which the sodium may be replaced by potassium or ammonia, and the aluminum by iron or chromium. With an alum phosphate baking powder of good quality, containing 28 per cent of bicarbonate of soda neutralized with acid phosphate of calcium and sodium alum, about 20 per cent of alum is used, the rest of the alkali being neutralized with acid phosphate. The residue left in the food will be hydrate of aluminum and sulphate of soda resulting from the decomposition of the alum, and phosphate of calcium and phosphate of sodium from the acid phosphate. An alum phosphate baking powder containing 20 per cent of alum will leave in the food about 6 per cent of its weight of hydrate of aluminum, and about 20 per cent of its weight of sulphate of soda. Mr. Rew says there is a violent prejudice in the public mind against alum phosphate baking powder, kept alive by advertising and resulting in benefit to some baking powder manufacturers. All baking powder manufacturers use starch to dilute their mixtures and get the gas percentage they wish. If they used more alum than the soda would neutralize, they would be adulterating or filling their baking powder with alum, and as starch is a very much cheaper substance, no manufacturer would use more than his soda required. It is possible to have powder manufactured which would leave some alum, but Mr. Rew has never found such baking powder. (87-89.)

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Dr. Austen, who has been employed by several manufacturers of alum baking powders to conduct special experiments as to the effects of food prepared with such baking powders and to examine the literature of the subject, asserts that the public mind has been prejudiced by the publication of a great many articles in newspapers and journals which were not properly reading matter but paid advertisements. Many of the publications which have printed this matter have made contracts which did not allow them to publish any of opposite tenor. (531, 532.)

Professor MITCHELL says the starch used in mixing baking powders is usually cornstarch. (118.)

Professor MALLET states that no baking powder manufacturers, so far as he knows, make the materials of the powder. They only buy the cream of tartar or alum, as the case may be, the bicarbonate of soda, and the starch, and mix them. (554.)

B. Leavening power.—Professor EATON says that other things being equal the value of a baking powder is dependent upon the amount of gas evolved, some evolving only 5 or 6 per cent and others as high as 14 or 15 per cent. (236.)

Professor WEBER, of the Ohio State University, says that on examination of 36 brands of baking powders during the summer of 1887, of which 8 were cream of tartar powders, 2 phosphate powders, and 20 alum powders, the amount of carbonic-acid gas evolved by the alum powders was found to be one-half as great as that evolved by the other kinds. About twice as much alum powder was required to give the same results. (605.)

In experimenting upon 17 brands of alum baking powders, Professor MALLET found the amount of gas liberated on treatment with water to vary from 37 cubic inches to 100 cubic inches per avoirdupois ounce of baking powder.

"The variability observed appears to be partly due to variation in the proportion of starch or other indifferent matter used, partly to the variable character of the commercial bicarbonate of soda employed (containing a larger or smaller proportion of true bicarbonate), partly to greater or less purity of the other active ingredients, partly to greater or less care in the adjustment to each other in proper proportions of the acid ingredients and the soda, partly to want of due care to insure uniform mixture of the ingredients, but mainly to greater or less absorption of moisture from the air in keeping, different degrees of care in drying the materials, and in putting up the powder in packages for sale, and no doubt difference in age of some of the samples." (558, 559.)

Professor WITHERS, of the North Carolina Agricultural Experiment Station, says that of 24 samples of baking powder bought in the open market in that State, without any attempt to secure any particular brand or class of powders, 2 were tartrate powders prepared in New York, 2 were phosphate powders prepared in Rhode Island, and the remaining 20 contained alum. One of these was an alum and tartrate powder, and contained practically no available carbonic acid. Six were alum and phosphate powders; one of these contained practically no carbonic acid, another less than 3 per cent, and another less than 4 per cent. Thirteen were straight alum powders. (617.)

C. Economic considerations.—1. Differences in price.—Professor MALLET says that the average price of alum baking powder is from 10 to 15 cents a pound, and the price of cream of tartar powders is from 40 to 50 cents. The fact that cream of tartar powders are largely sold in spite of this great difference of cost proves that the use of alum is popularly believed to be injurious. (555, 556.)

Professor MITCHELL says there is a sale for alum baking powders, especially in supplying boats, hotels, boarding houses, trains, etc., where the steward must make a showing of economy. (108, 109.)

Professor AUSTEN declares that the economic advantage of the use of alum baking powder is exceedingly great. In Georgia a baking powder is sold for 10 cents, of which 1 teaspoonful raises a quart of flour. An amount of high-grade cream of tartar to give the same degree of gas efficiency would cost nearly \$2. To forbid the use of alum baking powder would increase the cost of living by many millions of dollars. Professor Austen has figured the difference in Georgia alone at over \$3,000,000 a year. (542, 543.)

Dr. McMURTRIE, consulting chemist of the Royal Baking Powder Company, says that 1 pound of tartrate baking powder is equivalent in leavening power to 1½ pounds of ordinary alum powder. The relative cost would therefore be 45 cents and 15 cents for the same leavening power, on a basis of a price of 10 cents a pound for alum powder. The contrast between \$2 and 10 cents suggested by Dr. Austen is misleading. The saving of \$3,000,000 to the inhabitants of Georgia alone, which Dr. Austen estimates to be effected by the use of alum rather than tartrate powders, "would be equal to one-third of the amount paid by consumers for all the alum baking powder made and sold annually in the whole country," "even taking the exaggerated figures put forth in the claims of the alum baking-powder manufacture." (600.)

2. Cost of alum.—Dr. McMURTRIE asserts that the alum used in making baking powder costs no more than 3½ cents a pound, and that the materials of the alum baking powder as a whole do not cost 2 cents a pound. (600.)

Mr. ALLEN MURRAY, a drug and spice miller, says that at one time he furnished burnt alum to be used in the manufacture of baking powder. The price was about 24 cents, but finally got down to 3½ cents. At first there was a patent on

burnt alum, but he fought it for three years and beat the patentee. The manufacturers themselves wanted to burn it, and reduced the price to 3½ cents; then witness went out of the business. It is manufactured in Buffalo and in New York City; the Pennsylvania Salt Company, the largest manufacturers, manufacture it in Chicago. The Grant Baking Powder Company manufactures its own, or used to. (70.)

3. Deceptive labels.—Professor MITCHELL says that alum baking powders are sold either under deceptive labels or not labeled at all as to their composition, and that while they are sold at wholesale at very low prices, they frequently reach the consumer at prices as high as that of cream of tartar baking powder, very frequently prizes being given with them which are supposed to be given for nothing. The dairy and food commission of Wisconsin ordered the arrest of a Milwaukee merchant who sold the inspectors 2 samples of baking powder, one for 20 cents a pound and the other, labeled "best" baking powder, but identically the same powder, for 50 cents, a china dish being given with it. The witness read the label used, which contained the words, "Warranted Cream of Tartar Baking Powder Company, New York, U. S. A." in such a way that the careless reader would read, "warranted cream of tartar baking powder," the word "company" being on the lower line. The formula which would make cream of tartar baking powder is given, but there is no cream of tartar in the baking powder, nor is it made in New York. To comply with the Wisconsin law requiring such powder to be branded as containing alum, the manufacturers have left their deceptive label on the side and top, and stamped on the side in black letters, "This baking powder contains alum." Professor Mitchell considers this one of the most flagrant cases of deceptive labeling. (107, 108.)

D. Cream of tartar.—*1. Source and action.*—Professor VAUGHAN, dean of the medical faculty of the University of Michigan, says the baking powders most commonly sold in this country are the tartrate and the alum baking powders, and that the ideal baking powder is the tartrate, consisting of the acid tartrate of potash, obtained from the grape. When the wine ferments, the tartrate, being less soluble than the alcohol, is precipitated, and is then taken and purified and mixed with bicarbonate of soda, and a little starch to keep it dry and to act as a filler. In making bread the acid tartrate decomposes and sets free carbonic acid, which leavens the bread and improves its digestibility, because the gastric and other juices get into the pores better. He thinks there can be no objection to the use of tartrate baking powder; the Rochelle salts formed by the action of the tartrate of potash on the bicarbonate of soda are not injurious, but are beneficial. (205, 206.)

Dr. WILEY says cream of tartar is made from grapes. It is the acid principle of the grape, made from the argols which settle in casks and bottles of wine. He would not say that it would be wholesome in excess, nor would he call it injurious. (47.)

Professor MALLET states that cream of tartar is the bitartrate or acid tartrate of potassium obtained from grapes. As the fermentation of wine progresses, the wine becomes less and less capable of holding the tartar in solution, and crusts of argol or crude tartar are formed in the casks. Cream of tartar is obtained by dissolving and crystallizing this argol. Some cream of tartar is also obtained from the spent yeast or lees or dregs of the wine vats. The whole supply comes from the wine-producing countries. Some, but not much, is obtained from the wine industry in the United States. (553, 554.)

Professor PRESCOTT says cream of tartar is a constituent of fruits, especially the grape. The acid salts of fruits are among the most wholesome and important constituents of human food, and when entirely lacking leave sailors and soldiers victims of scurvy. Cream of tartar has a high rank as a wholesome article of food, both in itself and in what it leaves behind after the process of baking. This residue is Rochelle salts, which in the doses in which it occurs in food has only that favorable effect which fruits have. (200.)

Mr. PETRAKUS, a chemist, says that cream of tartar baking powder produces 70 per cent of sodium potassium tartrate, which is the basis of Rochelle salts. (292.)

Dr. McMURTRIE states that the residue left in bread by the use of cream of tartar baking powder is sodium potassium tartrate. This is disposed of in the process of digestion "in exactly the same way as other vegetable substances of like character, and is digested in exactly the same way as sugar." The tartaric acid radical is broken up into carbonic acid and water, and the alkaline radical passes into the blood, supplying the necessary alkaline constituents of it, and is eliminated by the kidneys, tending to correct any unfavorable acidity of the fluids of the body. The amount of tartrates in an ordinary loaf of bread made with cream of tartar baking powder may be equivalent to that contained in a pound and a half of ripe grapes. (594, 595.)

Professor MALLET says that he has never directly investigated the wholesomeness of cream of tartar baking powder, but he has no reason to believe that it is unwholesome. He can imagine a case in which a large amount of cream of tartar might be injurious, by rendering the urine alkaline and causing precipitation of the earthy phosphates. On the other hand, many people with a tendency to uric acid deposition from the urine are benefited by the production of such an alkaline character. (554.)

2. Adulteration and substitution.—Dr. McMURTRIE, consulting chemist for the Royal Baking Powder Company, the Cleveland Baking Powder Company, and the Price Baking Powder Company, states that the cream of tartar which is used by these companies in the manufacture of their powders does not vary appreciably from a purity of 100 per cent, and that the other ingredients used in their products are of a similar high degree of purity. (594.)

Dr. WILEY bought 7 samples of cream of tartar in New York City, 2 or 3 in drug stores, and the rest in groceries. Three of the samples were cream of tartar, one contained 98 per cent of cream of tartar, and one 24 per cent. The other two were phosphate of calcium and calcium sulphate combined, without a trace of cream of tartar. This combination is the substance which is known in the trade as c. t. s., or cream of tartar substitute, but they were not labeled as substitutes. They were sold by the retailer as cream of tartar, and at the price of cream of tartar, 50 cents a pound. (584.)

Professor MITCHELL, chemist to the Wisconsin dairy and food commission, says that as a rule the cream of tartar purchased by the Wisconsin inspectors in drug stores was of high grade, generally having a large amount of actual cream of tartar in it, and was much more nearly worth the price paid than the samples purchased of grocers, which as a rule were not cream of tartar to any great extent, 80 per cent being substitutes generally composed of acid phosphates of lime and alum mixed with starch, and sometimes small amounts of cream of tartar. In a few samples there were possibly natural impurities in large amounts—tartrate of lime and sulphate of lime—small amounts of which were also present in some of the drug-store samples. The substitutes for cream of tartar are generally sold as phosphatic cream of tartars. The jobber buys them of the manufacturer as phosphatic tartrates, but sells them to the grocer as cream of tartar, or did so in Wisconsin until investigated. Professor Mitchell much prefers cream of tartar to an alum substitute, and does not think alum suitable for food. (117.)

Professor Mitchell says acid phosphate of lime is made either from bone phosphate or from natural rock phosphate by treatment with sulphuric acid, and is generally mixed with flour or starch to prevent caking. (117, 118.)

Mr. MURRAY says a certain line of goods are considered commercial goods, such as commercial cream of tartar, some of which has not very much cream of tartar in it. This costs about 5 cents a pound, while the pure is worth about 21½ cents a pound. (67.)

Professor FREAR says that a very large proportion of the samples of cream of tartar examined by him consisted either of terra alba, or terra alba with a little free tartaric acid, or cream of tartar diluted with terra alba or with acid calcium phosphate. (529.)

E. Composition of alum baking powder.—Professor MALLET, professor of chemistry in the University of Virginia, says that alum began to be used in baking powders in this country about 20 or 25 years ago. Alum is a very cheap material and it produces a good-looking bread. The alum baking-powder industry has consequently become very large. Some 5 or 6 per cent or more of phosphate of calcium is very commonly added to the alum baking powders. (551.)

Dr. WILEY says there are various forms of alum, which is a double salt of which alumina is one base and ammonia, potash, or some other metallic oxide the other. (46.)

Professor AUSTEN says that the material which is now commonly used in baking powders is not what is popularly known as alum. If a drug store orders alum, a potash alum is understood; and this was formerly used in baking powder. In making an alum baking powder, however, the evolution of gas must be so regulated that it will be given off slowly and in accordance with the temperature. If it goes off too quickly the bread swells up in a big bubble; if too slowly, it will not rise. It has taken a great deal of experimenting to produce a so-called alum preparation which will give exactly the same results in the evolution of gas as a cream of tartar or a phosphate powder. The alum which is now used in baking powders is c. t. s., or cream of tartar substitute, a calcined mixture of sulphate of alumina and sulphate of soda. C. t. s. is made, Dr. Austen believes, only by 3 very large chemical manufacturers. The baking-powder makers do nothing but put the materials, c. t. s., bicarbonate of soda, and starch or flour, into the

mixing machine. All the manufacturers of alum baking powder use substantially the same formula; the only difference is in the strength. (541, 542.)

Dr. MCMURTRIE says that alum baking powder consists of a mixture of soda alum, bicarbonate of soda, or ordinary baking soda, and about 60 per cent of starch. (596.)

Dr. McMurtie says that 3 alums have been used for the making of baking powder. The first is potassium alum, double sulphate of alumina and potassium; the second, ammonium alum, a double sulphate of alumina and ammonium, and is less expensive than the first; the third, soda alum, the double sulphate of alumina and sodium, is less expensive than either. It is the last which is now chiefly used in the manufacture of alum baking powder. It is not generally sold under the name of alum, but is labeled and billed as c. t. s., which means cream of tartar substitute. The manufacturers of alum baking powder have often no knowledge of chemistry, employ no chemists, and have no means of knowing the composition of their materials except the statement of the manufacturer they buy from.

The first process in the manufacture of alum is to treat the mineral known as bauxite with sulphuric acid. The solution thus obtained is evaporated to a proper density and mixed with a solution of soda. When the mixture cools the 2 substances, alumina sulphate and sodium sulphate, crystallize together, forming what is known as soda alum. A considerable amount of water is taken up in the process of crystallization. The water is driven off by heat, and a porous matter remains, which is called "burnt alum." This burnt alum, when pulverized, is the substance which is used in the baking-powder manufacture. In order to have a product which corresponds exactly with the theoretical composition of sodium and alumina sulphate the greatest care must be exercised in the manufacture. It generally happens that some of the acid constituent of the compound is driven off in the process of burning, and we have in the finished product some uncombined or partially saturated alumina. The product obtained in this way can not, therefore, have a constituent composition. Its power to decompose the bicarbonate of soda when used in baking powder must be variable. It is readily understood, therefore, why the manufacturer of the alum should in sending each lot to his customer indicate what its neutralizing power is, and why the manufacturer of baking powder must accept what the alum manufacturer tells him, and why the baking powder must have an uncertain and variable composition. (595, 596.)

Professor MALLET states that the greater part of alum is now obtained from bauxite, a native hydroxide of aluminum. This is treated with sulphuric acid of a certain strength, sulphate of sodium is added, and the whole is evaporated until it sets in a crystalline mass on cooling. (554.)

F. Alum not found in natural foods.—1. *Organic bodies.*—Dr. WEBER mentions as an objection to alum baking powder that aluminum compounds do not occur in either the vegetable or the animal matters which are the sources of food for man. (605.)

Professor MUNROE believes that we should not use as food any substance which does not appear naturally in the vegetable or animal organisms. Cream of tartar occurs naturally in vegetation. Phosphates occur naturally in vegetables and animals. The salts of aluminum very rarely appear in the analysis of animal or vegetable material, and in the few cases in which it has appeared it has not been shown that its presence was not accidental. This is the more remarkable since aluminum is estimated to be the third element in abundance. (608.)

Dr. MCMURTRIE, consulting chemist of the Royal Baking Powder Company, asserts that no compound of aluminum is ever found in any flowering plant or any natural food of vegetable or animal origin. He has seen a single statement by a chemist in Japan that aluminum has been found in wheat; but he believes that the aluminum was introduced accidentally and was not contained in the grain itself. (599.)

2. *Potable waters.*—Dr. MCMURTRIE, consulting chemist of the Royal Baking Powder Company, says that aluminum compounds do not exist in potable waters in quantities sufficient to be taken into account. It has been said by Dr. Flint, and also by Dr. Smith, that certain public analysts in England, in determining the amount of alum which has been added to bread, make a correction of a grain and a half per pound of bread to correspond with the alumina in the water used. This would mean, according to Dr. McMurtie, about $1\frac{1}{2}$ parts of alum in 7,000 parts of water. He has made inquiry among chemical experts who have had much to do with the examination of natural potable waters in the United States, and they declare that they have failed to find alumina in such waters in quantities exceeding 8 parts per million. (599, 600.)

G. Chemical action of alum baking powder.—Dr. WILEY says alum is used in baking powder to free the carbon dioxide from the bicarbonate of soda. (46.)

Professor HALLBERG says that alum baking powder leaves a residue of aluminum hydrate in the bread. The question as to the character of aluminum as an ingredient in baking powder is not yet settled. The authorities differ, and experts can be found to assume any view that the employer desires. (102.)

Mr. GEORGE C. REW says that, strictly speaking, alum means a double sulphate of an alkaline metal—aluminum. The substance left in food prepared with alum baking powder is hydrate of alumina and sulphate of soda, neither of which is alum, though alum may be manufactured from them. (104.)

Dr. McMURTRIE says that when the baking powder is brought into contact with water, either by itself or mixed with flour, and the mass is cold, comparatively little action occurs. When heat is applied the sodium constituent of the bicarbonate of soda takes the place of the aluminum in the alum. Carbonic acid is liberated, and some chemists say that the aluminum is set free in the form of aluminum hydroxide and all of the sodium of the bicarbonate of soda is changed into sodium sulphate, which is also one of the constituents of the soda alum. The solid residue which remains in the bread is sodium sulphate and an aluminum compound. There are good authorities who believe that the decomposition of the alum is never complete, and that some unchanged alum always remains in the bread. (596.)

Dr. McMURTRIE states that in the later pharmaceutical authorities in the United States alumina—that is, aluminum hydrate—is described as a medicinal agent and an astringent. In the dialysis of aluminum compounds the compound which is left behind is aluminum hydrate. It seems probable that it has an astringent effect upon the cells of the kidneys. (599.)

Professor MOTT found that the administration of bread made with excessive amounts of alum baking powder produced the same effects upon dogs as the administration of hydrate of alumina. Phosphate of alumina in large doses, though producing some physiological disturbances, had no such marked effects. Professor Mott concludes from these results that the alumina in biscuits made with alum baking powder must be, to a very great extent, in the condition of hydrate of alumina rather than phosphate. (628-631.)

Of the 17 brands of alum baking powder examined by Professor MALLET, all but 1 contained calcium acid phosphate as well as alum. In all cases in which phosphate was used nearly the whole of the aluminum was present as phosphate, and not as hydroxide (hydrate), after treatment with water. (561.)

Professor MOTT quotes from Professor Patrick, who considers himself to have proved the wholesomeness of alum baking powder, the admission that if bread is carelessly mixed with an insufficient amount of water, part of the flour, and with it part of the powder, remains nearly or quite dry, and after baking, such bread will contain a certain small amount of alum. Professor Mott asserts that there are few who make good bread, and therefore regards Professor Patrick's remark as equivalent to an admission that alum is likely to appear in alum baking-powder bread. (635.)

H. Solubility of aluminum hydrate.—*1. Denied.*—Mr. REW says that Francis Sutton, the English analyst, whom he considers the best authority who has ever investigated the subject, determined by experiments on living animals that hydrate of aluminum was not soluble in digestive juices, but was excreted in the same condition in which it was taken into the stomach; the sulphate of soda having almost identically the same physiological action as the Rochelle salts left by cream of tartar baking powder. Mr. Rew says aluminum hydrate is soluble in hydrochloric acid, but not in the weak hydrochloric acid of the stomach, according to Sutton's testimony in the Norfolk Baking Powder Case. (88, 104.)

2. Doubtful.—Dr. MEW, chemist to the Army Medical Department, says that it is quite uncertain whether aluminum hydroxide is dissolved in the stomach or not. Ordinarily it is practically an insoluble substance. In the human laboratory it may go into solution, possibly. If it does it may do harm; but Dr. Mew knows of no evidence that it does. (612.)

Professor MOTT refers to the experiments on cats, by which Professor Patrick thought he showed alum baking powder to be uninjurious. Professor Patrick fed cats with biscuits made with as large a proportion of alum baking powder as 6 teaspoonfuls to 1 quart of flour. From 20 minutes to 2½ hours after eating these biscuits the cats were killed, and the contents of the stomach and of the small intestines were examined for dissolved alumina. Professor Patrick says that "in every case a large amount of sodium sulphate was found (in solution as was expected), and also a certain amount of hydrate of alumina undissolved." Professor Mott declares that the meaning of the statement that hydrate of alumina was found undissolved is not clear, and he does not think that Professor Patrick's

experiments, so far as they are explained, prove that hydrate of alumina is not dissolved in the stomach or is not absorbed into the system. (635.)

S. Affirmed.—Professor PRESCOTT thinks the most objectionable constituent of baking powders in this country is alum. As a salt of aluminum it contains an astringent which has a medicinal effect when applied with remedial intent, but is injurious when taken habitually and indiscriminately. In the mixing of bread sponge it undergoes a change, and doubtless some portion becomes very difficult of solution, so that not all of the alum comes into solution in the stomach; no one can tell how much. The alum is liable to go into solution, and if not fully dissolved when in the condition of aluminum hydrate or other compound of alum in contact with the acidulous or albuminous fluids of the stomach, it is liable to go into combinations with the digestive agents of the stomach and with the constituents of food, so as to have an effect as an astringent and a precipitant, which, though slight, tends to impair the sources of nutrition when continued from year to year. No two stomachs are in exactly the same condition. The chemical agents of solution in the stomach are too complex to be fully defined by chemistry at the present time. (196, 197.)

Dr. CRAMPTON says that the solubility of hydrate of aluminum and phosphate of aluminum in water or dilute acid is a question readily answered by any chemist, but their solubility in the various and complex alimentary fluids, and under the conditions of natural digestion in the human body, is quite another matter. Some experimenters have reported practically no solution, others a considerable amount. Improper proportioning of the different ingredients in the powder, and improper mixing of the powder in the dough, are likely to result in an imperfect reaction and in the appearance of more or less of the original salt in the bread. Considering this, as well as the various character of the solvents used and the different conditions, it is easy to understand the difference between the results of different experimenters; but it must be expected that at least small quantities of alum will be absorbed. (623, 624.)

Professor MITCHELL, chemist to the dairy and food commission and the State board of health of Wisconsin, has failed to find any alum baking powder which would react perfectly and not leave some soluble alum. He says that there is no question but that hydrate of alumina is soluble in the dilute acids of the stomach in a normal condition, and his opinion is that it would be more or less soluble as a chloride, or at least liable to absorption, its tendency being to act as an astringent and possibly as a mild irritant—as a drug, and not as a food. He would prefer either cream of tartar or phosphate baking powder. (108.)

Dr. WEBER says that aluminum hydroxide is itself a mild astringent, and is soluble in dilute acid, and consequently in the juices of the stomach, and that the salt thus formed acts in all respects like alum itself. (606.)

Professor FAIRHURST, of Kentucky University, says hydrate of alumina is soluble in the acids of the stomach. (620.)

Dr. McMURTRIE asserts that it is indifferent whether any unchanged alum remains in the bread or not; for even if the reaction is completed in the manufacture of the bread the resultant aluminum compounds, under the influence of the several acids which are present in the gastric juice, must produce all the medicinal and therapeutic influences which are ascribed to alum. It has been proved that soluble aluminum compounds do exist in bread made with alum baking powder; but whether they exist in the bread itself, or whether they are formed by the reactions occurring in the stomach, the system may be subjected to the action of these soluble aluminum compounds when such bread is consumed. (596, 597.)

Dr. McMurtrie says further that Dr. Smith and Dr. Flint, upon whose experiments the statements of Dr. Austen are based (539, 540) stated in their testimony in New York that they knew nothing about the disposition of aluminum compounds in the body when ingested with the food; that they knew nothing about the amount of alumina that was ingested; and that they were unable, therefore, to say whether the alumina passes through the alimentary tract unacted upon and inert, or whether it went into the blood and the circulation; and, if it did go into the blood and the circulation, whether it would be wholly excreted or whether it would remain deposited in the organs as a disturbing and injurious element. (598.)

Professor MUNROE, of the Columbian University, testifies that though aluminum hydroxide is but slightly soluble in water, it is soluble in lactic acid and acetic acid, which may occur in the stomach and may be produced during the process of digestion. He therefore believes that the alum product in bread is capable of a harmful effect. (609.) After making and artificially digesting bread in which alum baking powder was used Professor Munroe states, in a letter to Senator Mason, that his experiments "show conclusively that hydrochloric acid of the strength found in the gastric juice of man will, at ordinary temperatures, dissolve

the residues left by alum baking powders in bread baked with them, and that the solutions of the aluminum compounds thus formed will pass through animal membranes by osmosis." (638.)

When aluminum hydroxide and aluminum phosphate are heated they give off water, and become less soluble. For the purpose of determining the degree in which the water may be driven off and insolubility produced in the process of baking, Professor MALLET made experiments as to the temperature of the interior of bread in the oven. Experiments were made with a large public baking oven of brick, 12 feet by 14 feet, heated by a coke fire; with a small brick oven in family use; and with the ovens of ordinary cast-iron cooking stoves, burning both wood and coal. The results were substantially uniform. The temperature of the oven atmosphere varied from 472° to 496° F. The maximum temperature shown by the registering thermometer with its bulb in the center of a loaf of bread, large or small, never exceeded 212° F., and at that temperature not all the water is removed. The lowest temperature recorded was 197° F. In that case the bread was not quite sufficiently baked through. (561, 562, 565.) Professor Mallet concludes that part of the aluminum is probably taken into solution. (566.)

I. Physiological effects of alum baking powder.—*1. Harmless.*—Professor AUSTEN states that the residuum left in bread when alum baking powder is used consists of sulphate of soda and hydrate of alumina. The amount of sulphate of soda is so small that it may be overlooked. Indeed, it is asserted that the presence of it is rather advantageous. The manufacturers of the well-known "grape nuts" state that one of the most advantageous features of this food is the presence of a certain amount of sulphate of soda. As to the hydrate of alumina, Dr. Austen asserts that several authorities have pronounced it perfectly harmless under practical conditions. Some experiments from which a contrary inference has been drawn do not seem to Dr. Austen to warrant the inference. Professor Mallet ate quite large quantities of hydrate of alumina, prepared from alum baking powder, and noted the effect produced upon himself. He thought it gave him indigestion. Professor Mallet is an eminent man, but Dr. Austen does not think that he considers himself a physiological chemist. He is not accustomed to experimenting on himself, and it is therefore questionable whether he is able to observe accurately the effects upon himself of a given substance. If a man unaccustomed to such experiments eats any substance, and devotes his thoughts to the effects which it may have upon him, violent effects due to suggestion may appear. Violent diarrhea has been produced by a glass of water with the suggestion that diarrhea would follow. Moreover, even if such an experiment were conducted by a person whose experience fitted him to conduct it, it would still be inconclusive as to the question at issue—the effect of small amounts of baking-powder products as taken in actual practice. Experiments with the chemical residuum of baking-powders may be inferential, but they can not fairly be considered proofs. (535, 536.)

Professor Austen states that, being empowered to undertake an experimental investigation of the effect of food prepared with alum baking powder upon the human system, he engaged Prof. Austin Flint, one of the most distinguished living physiologists, and Dr. E. E. Smith, a former assistant of Professor Chittenden, of Yale College, to conduct the actual experiments. As a standard of comparison, normal or control bread, a bread made with hydrochloric acid and bicarbonate of soda, carefully weighed out in their proper proportions, was fixed upon. Such a bread contains no residuum from the leavening substance except common salt. This bread and also a bread made with a common brand of alum baking powder bought in the market were very carefully made by Dr. Smith himself and reduced to crumbs and sampled, so that the material might show an even composition. The first experiment was made with artificial digestion, by means of a solution of hydrochloric acid and pepsin. The result showed practically no difference between the action of the control bread and that of the alum baking-powder bread.

The next experiment was made upon human beings. Persons were got into a proper normal condition and were then fed with a diet of determined composition, consisting of the breads under consideration and meat, milk, butter, and water. The feces and urine were collected and analyzed. No appreciable difference was found between the effects of the alum bread and those of the control bread. The per cent of available nitrogen in the feces from the alum bread was 90.8 per cent; from the control bread, 90 per cent.

The next set of experiments was to ascertain the influence of the bread made with alum baking powder upon the secretion of the gastric juice. Several men, young doctors or medical students, were given each 60 grains of one bread or the other and a certain amount of water in the morning, without any other food. Exactly an hour afterwards their stomach contents were pumped out and analyzed. There was no appreciable difference between the influence of the control bread and the influence of the alum baking powder bread on the secretion of the gastric

juice. Dr. Smith summed up the results of these experiments as follows: "In the experiments, the results of which are here briefly outlined, no difference was manifest in the influence on the digestive process of the Layton (alum) bread and the control bread. So far as has been observed, then, the residue resulting from the use of Layton alum powder has not diminished the digestibility of the food product or interfered with the digestive process."

Dr. Austen mentions as a matter of importance that the persons upon whom these experiments were made did not know what bread they were eating. In this way the influence of suggestion was avoided. (539, 540.)

Professor Austen says that he and Prof. Austin Flint and Dr. Smith "have been absolutely unable to find, by the most carefully and exactly conducted chemico-physiological experiments, the slightest difference between control bread free from residuum except salt and the bread made with alum baking powder." His conclusion is, therefore, that the use of alum baking powder in the preparation of food is absolutely uninjurious and wholesome. It is true that bread, like any food product, may be improperly prepared; but bread and similar products are, as a rule, fairly well made, and if they were not, any evil results which might follow defective preparation should not be attributed to the materials. (541, 543.)

Dr. Austen states that he has submitted to many eminent physicians the questions whether they have ever had a patient whose diseased condition of the digestive system could be attributed, either wholly or in part, to the use of alum baking powder in food, and whether they have ever been led to attribute any functional disorders or diseased conditions to the use of alum baking powder in food. He has not been able to get from the most eminent physicians in New York and several other cities an opinion that anyone has ever observed any functional disturbance which could be traced to the use of alum baking powders. (538, 541.)

Mr. DELAFONTAINE has examined bread and cakes made with baking powder, and never detected any residuum injurious to health, unless the sodium sulphate resulting from the decomposition of the alum products or the product resulting from decomposition of the cream of tartar products be injurious; and there is so little that it does not amount to anything. Alum is sometimes prescribed as an astringent in doses of from 10 to 20 grains. If in a baking powder containing 40 per cent of crystallized alum 1 per cent should escape decomposition, there would be less than 1 grain in the loaf of bread. The smoking of a cigar sometimes is worse than the amount of alum or cream of tartar which may escape decomposition in baking. The great outcry against this or that baking powder is more for advertising purposes than in the interest of public health. Mr. Delafontaine thinks that as the two kinds are manufactured now the honors are even between them as regards healthfulness. He admits that cream of tartar occurs in grapes, while alum does not occur in any natural food, but says cream of tartar has some poisonous properties, potassium salts being poisonous. Tartaric acid in cream of tartar is a poison, but it takes a very large dose of cream of tartar or tartaric acid to kill a person. (230, 232.)

Mr. MURRAY uses alum in making baking powders, and thinks it just as good and healthful as cream of tartar if properly neutralized. (67.)

Mr. PETRAENS, a chemist, says that he is convinced after an investigation of alum baking powder that it is not deleterious to the public health, and that it is really the most perfect baking powder in the market, because its residuum is smaller than that of any other. The baking powders of commerce are generally a mixture of, say, 75 per cent of an alum powder and 25 per cent of a phosphate powder. The alum part, or 75 per cent of the baking powder, will produce about 22 per cent of sodium sulphate and about 3 $\frac{1}{2}$ per cent of alumina oxid. There is no danger that any alum will remain in the bread after baking, because the alum will rapidly be decomposed by the soda under heat of the oven. Mr. Petraens says that alum baking powder is an excellent leavener, because the burnt alum is insoluble in cold water, and the powder therefore generates gas very slightly before it is heated. The baker is enabled to do his kneading slowly and thoroughly, and a more wholesome food is produced than when it is necessary to hurry the dough into the oven. (292, 293.)

2. Wholesomeness doubtful.—Professor DE SCHWEINITZ, a chemist and bacteriologist of the Department of Agriculture, says that so far as physiological experiments go there has been practically no evidence to show that alum in baking powder does any harm. The case is perhaps parallel to that of borax and boracic acid. The work done from the physiological standpoint has proved as conclusively as such work can prove that borax and boracic acid are perfectly harmless. Yet one would not recommend their use. Theoretically alum in baking powder may be said to be injurious. The burden of proof lies on the side of those who favor the use of it. (614.)

Professor MUNROE says the salts of alum are well known to be poisonous in large doses. If a substance which is poisonous in large amounts is proposed as an article of food, those who introduce it should be subject to the burden of proof that it is not injurious in moderate and repeated doses. (608, 609.)

Dr. MEW says sodium sulphate in very small quantities retards artificial digestion in the test tubes in the laboratory. It may possibly produce injurious effects in the stomach. Since there are possibilities, perhaps probabilities, of some harm being done, it is better to use the tartrate powders. The discussion of the subject is largely hypothetical. The physiological test is the ultimate analysis, and there has been very little physiological work done on the problem. In the Army no alum baking powder has ever been used. (612, 613.)

Dr. WOODWARD, health officer of the District of Columbia and former coroner, has never seen or heard of any specific case in which injurious effects have been traced to the use of alum in bread or in baking powder. Any astringent, like alum, diminishes the secretion of any mucous membrane, such as the lining of the stomach, and therefore interferes with digestion. The use of alum itself as an ingredient of food should be forbidden.

The purpose of the manufacturers of alum baking powder is that no alum as such shall exist in the bread. Statements about the effects of alum do not, therefore, necessarily apply, although through the careless manufacture of such baking powders alum may possibly appear in the bread. The statement that substances which are not natural constituents of organic bodies are injurious is, of course, a matter of theoretical reasoning. The most that can be said is that the burden of proof should be on the advocate of the use of such substances. But since there are materials for baking powder that are free from this objection, it would seem that steps should be taken either to secure evidence of the harmlessness of alum powders or to forbid the use of them. (610, 611.)

Professor HALLBERG says the question whether or not alum is an irritant poison has not yet been entirely settled. (81.)

Dr. CRAMPTON, chief of the division of chemistry in the office of the Commissioner of Internal Revenue, states his conclusions as follows:

"From the various evidence that has been produced on both sides of the question I think the following conclusions may be safely drawn:

"(1) That form of alum powder in which sufficient phosphate is added to combine with all the aluminum present is a better form and less apt to bring alum into the system than where alum alone is used.

"(2) It must be expected that small quantities, at least, of alum will be absorbed by the digestive fluids where any form of powder containing it is used.

"(3) Whether the absorption of small quantities of alum into the human system would be productive of serious effects is still an open question and one that careful physiological experiment alone can decide." (624.)

3. Injurious effects affirmed.—Dr. WILEY says alum is an irritant and to some extent an antiseptic, tending to paralyze the ferments of digestion. It is poison in the sense of being an irritant, but not to so great an extent as many irritants. Its presence in food is very reprehensible, even in small quantities. Many stomachs can take a little alum without harm, but its presence should always be marked and known. He would not use alum in bread if he knew it. (46, 588.)

Professor VAUGHAN, dean of the medical faculty of the University of Michigan, says the question regarding baking powder is not altogether whether it is a poisonous substance or not, but also whether the bread made from it is good bread. He is quite positive that the alum baking powders should be condemned for the following reasons: (1) The action of the alum on the bicarbonate of soda is irregular and uncertain. No chemist can mix these substances in such proportions that they will give off a definite amount of carbonic-acid gas under all conditions, and consequently the bread will vary with the conditions of temperature, amount of water, kind of dough, etc., and is liable to be inferior. (2) The alum works upon the bicarbonate of soda so slowly and imperfectly that in a great many cases a residue of alum is left unchanged. Alum in large doses is seriously harmful, and even in small quantities it is an astringent and interferes with the secretion of the gastric juices, and is therefore injurious, especially when taken two or three times a day for a long period. (3) Even when the alum undergoes decomposition it forms either phosphate of aluminum or hydrate of aluminum, or both, and both of these are soluble to some extent in the gastric juices and are soluble in albuminous substances. They are harmful even in small quantities. (202, 205, 206.)

Professor FAIRHURST thinks the occurrence of hydrate of alumina in bread injurious to health. Alumina is not a constituent of the body, and its compounds, when taken in the blood, are simply foreign substances which must be

eliminated by the kidneys. Extra work is thus thrown upon the kidneys, and disease of them may possibly result. (620.)

Dr. JOHN C. WISE, medical inspector, United States Navy, writes the chairman of the committee (1) that alum baking powders produce a heavier and more indigestible bread than those made of tartrate of potash; (2) that the injurious effect of alum on the mucous coat of the stomach is not disputed, alum being both an irritant and an astringent, interfering seriously with the secretion of the digestive juices. (627.)

Dr. WILLIAM W. JOHNSTON, of Washington, says alum is used in medical practice to contract the blood vessels of the alimentary canal and to diminish the secretions. This effect necessarily interferes with digestion when produced in a man in health, and its long continuance would undoubtedly produce disease. The chemists assert that when alum is used in bread making its action is uncertain, and that a certain amount of it often remains unchanged. If this is a fact, Dr. Johnston says there can be no question of its deleterious influence. (225, 226.)

Professor MOTT prefaces the account of his experiments in the use of alum baking powders with this remark: "It hardly seems necessary for any experiments on animals to decide a question of this nature so that the use of alum baking powders can be condemned, for a thorough scientific investigation of the subject can lead to no other conclusion." Though fully believing that experiments were unnecessary to determine this question in sense hostile to the use of alum baking powder, Professor Mott thought it advisable to perform some experiments, in view of the fact that Professor Patrick, of Missouri, had conducted some experiments which he thought sustained the opposite opinion.

Professor Mott's first experiment consisted in the feeding of dogs with biscuits containing very large amounts of alum baking powder, in some cases 20 teaspoonfuls to the quart of flour, and in some cases 10 teaspoonfuls to the quart. These doses were followed by nausea and vomiting, extreme constipation, and a condition of general sickness and debility. Dogs fed with biscuits containing 20 teaspoonfuls of cream-of-tartar baking powder to the quart of flour showed no signs of sickness, though in one case the administration of the food was continued four days. Professor Mott's conclusion is that these experiments clearly demonstrate that the salts left in biscuits when a cream of tartar baking powder is used are perfectly harmless, but when an alum baking powder is used are very dangerous. (628-630.)

Professor Mott administered to dogs hydrate of alumina, mixed with meat, in doses of from 1 ounce to 4 ounces of precipitated hydrate, containing seven-eighths of its weight of abnormal water. Nausea, vomiting, and constipation followed, with weakness of the limbs, loss of ambition, and dulling of the eyes. Phosphate of alumina, containing three-fourths of its weight of abnormal water, administered in a dose of 3 ounces, followed by a dose of 2 ounces the next morning, produced a diminution of activity, dimming of the eyes, and an appearance of sickness, but no vomiting. Alum mixed with meat produced the same results as the hydrate of alumina.

After feeding dogs with hydrate of alumina mixed with meat; and after also injecting a solution of hydrate of alumina directly into the stomach, Professor Mott found alumina in the blood, kidney, heart, spleen, and liver. The stomach and the duodenum were found congested.

One dog was fed with phosphate of alumina in quantities not stated. The stomach and the duodenum were found much congested after death, and considerable amounts of alumina were found in the spleen, liver, and heart.

In the only case in which the details of the administration of the hydrate of alumina are given, the dog was fed with 5 ounces of precipitated hydrate of alumina mixed with 2 ounces of meat. He ate only one-third of the mixture. This was followed up with five injections of hydrate of alumina directly into the stomach, the first dose being one-twentieth of an ounce, the last one-fourth of an ounce, and each of the other doses 1 ounce. The dog which took phosphate of alumina received 5 ounces of the precipitated phosphate (containing much water) mixed with meat.

From these experiments Professor Mott concludes that both hydrate of alumina and phosphate of alumina, when introduced into the stomach, are "sure to produce acute inflammation." (630-635.)

Professor Mott performed experiments in artificial digestion with gastric juice obtained from dogs, from which he concludes that both hydrate of alumina and alum check the digestive operation of the gastric juice, rendering it incapable of dissolving even the most digestible substances and entirely destroying its power of dissolving the more indigestible substances, such as boiled white of egg. Though the experiments of which he gives detailed reports were all made with

alum or with hydrate of alumina, he states in general terms that experiments were made with phosphate of alumina and basic sulphate of alumina, and that his experiments show that all alumina salts render the pepsin inactive and interfere with the powers of digestion. (632, 633.)

Professor Mott presented a letter from Dr. E. S. Wayne, of Cincinnati, Ohio, dated April 10, 1879, in which Dr. Wayne states that a Mr. Edwards and his wife and children were all made sick by eating cakes made with alum baking powder. They thought they had been poisoned with arsenic. Dr. Wayne examined the cakes and the powder and found nothing but alum. Dr. Wayne states that he has also known of another similar case. (636.)

Professor Mott expresses the opinion that a person who eats 1 biscuit made with alum baking powder will suffer from the alumina salts present in it. He adds: "It is certain that persons continually eating biscuits made with an alum baking powder will suffer from its poisonous effects, as the alumina salts, instead of passing out of the system, accumulate in the various organs, interfering with their proper functions." (636.)

Assistant Surgeon FREEMAN, of the United States Navy, believes that the continued use of alum baking powder will produce chronic indigestion. (619, 620.)

Dr. STRINGFIELD, a specialist in diseases of the digestive tract, testifies that alum, a double sulphate of aluminum and soda, is an irritant poison, cumulative in its effects. It impairs nutrition, retards digestion both in the stomach and in the intestines, and produces dyspepsia, indigestion, and constipation. It is also a positive irritant of the kidneys, through which it is excreted. It undergoes change in the stomach, liberating carbonic-acid gas and forming a phosphate or hydrate of aluminum. The hydrates or phosphates formed are moderately soluble in the gastric juice.

Dr. Stringfield has concluded from his observation that the great majority of cases of difficulty with the digestive tract may be traced to the white bread and the quick hot breads that are made with baking powder. The daily and continuous use of alum is not only harmful, but positively poisonous. (548, 549.)

Dr. WEBER says that the unpalatable taste of food prepared with alum baking powder is due to sodium sulphate or Glauber's salts, which is extremely bitter. Besides the matter of taste, this has the disadvantage that all unpalatable food interferes with digestion by checking the secretion of the gastric fluids. (606.)

Upon treating aluminum hydroxide and aluminum phosphate with an artificial gastric juice prepared with hydrochloric acid and pepsin, Professor MALLET found that a part of the aluminum was dissolved by the acid liquid and a part of the organic matter used as pepsin was rendered insoluble. Both of these effects are regarded by Professor Mallet as tending to indicate and to explain an interference with natural digestion by aluminum compounds taken into the stomach. The hydrochloric acid of the gastric juice, being partly charged with the aluminum, would have less power of dissolving the nutritious substances of food, and the precipitation of pepsin in an insoluble form would also interfere with the digestive process. Professor Mallet believes that soluble organic matters contained in food might also be rendered insoluble in the same manner as the pepsin. (564, 565.)

Professor Mallet gives an account of a series of experiments upon his own person to determine the physiological effects of hydroxide and phosphate of aluminum, which are the principal residual substances left in bread by the use of alum baking powders. A weighed quantity of one or the other was taken, either with or a few minutes before a regular meal. The experiments were made with intervals of three or four days between them. There was no preexisting digestive derangement, and as much care as possible was taken to avoid any mere fancying of expected symptoms. The quantity of aluminum hydroxide taken at one time varied from 10 to 50 grains, and the average was about 28 grains. The quantity of aluminum phosphate taken at a time varied from 10 to 100 grains, and the average was 45 grains. These doses were intentionally made larger than quantities of the aluminum compounds which might probably be received at once in eating bread made with alum baking powder. The object was to determine with what doses distinct effects were noticeable. Distinct effects seemed generally to appear when the dose was not less than 20 grains of the hydroxide or not less than 30 or 40 grains of the phosphate. Bread made of the ordinary alum baking powders might be expected to contain about 13 or 14 grains of aluminum hydroxide to the pound of bread if alum alone were used in making the powder, or about 20 or 21 grains of aluminum phosphate to the pound of bread if alum and calcium acid phosphate were used together and all the aluminum were left in the bread as phosphate.

On two or three occasions, particularly with the smallest doses, there was no clearly observable effect. The general tenor of the experiments, however, con-

vinced Professor Mallet that the aluminum compounds had an inhibitory effect on gastric digestion, and in some cases, particularly with the larger doses, interference with digestion was very noticeable. The effect of the hydroxide was greater than that of the phosphate for equal weights. There was no gastric pain or other symptom, or intestinal irritation, but simply the oppressive sensations of indigestion, properly so called. The symptoms generally lasted 2 or 3 hours after taking the food. Professor Mallet believes that a considerably less quantity of the compounds than would be necessary to produce decided discomfort when once administered might prove objectionable and injurious when habitually taken as a part of the bread of each daily meal. (562, 563.)

Professor Mallet sums up his conclusions from his experiments upon alum baking powders and their residua in the following terms:

"(a) The greater part of the alum baking powders in the American market are made with alum, the acid phosphate of calcium, bicarbonate of sodium, and starch.

"(b) These powders, as found in retail trade, give off very different proportions of carbonic-acid gas, and therefore require to be used in different proportion with the same quantity of flour, some of the inferior powders in largely increased amount to produce the requisite porosity in bread.

"(c) In these powders there is generally present an excess of the alkaline ingredient, but this excess varies in amount, and there is sometimes found, on the contrary, an excess of acid material.

"(d) On moistening with water these powders, even when containing an excess of alkaline material, yield small quantities of aluminum and calcium in a soluble condition.

"(e) As a consequence of the common employment of calcium acid phosphate along with alum in the manufacture of baking powders, these, after use in bread making, leave at any rate most of their aluminum in the form of phosphate. When alum alone is used the phosphate is replaced by hydroxide.

"(f) The temperature to which the interior of bread is exposed in baking does not exceed 212° F.

"(g) At the temperature of 212° F. neither the 'water of combination' of aluminum hydroxide nor the whole of the associated water of either this or the phosphate is removed in baking bread containing these substances as residues from baking powder.

"(h) In doses not very greatly exceeding such quantities as may be derived from bread as commonly used, aluminum hydroxide and phosphate produce, or produced in experiments upon myself, an inhibitory effect upon gastric digestion.

"(i) This effect is probably a consequence of the fact that a part of the aluminum unites with the acid of the gastric juice and is taken up into solution, while at the same time the remainder of the aluminum hydroxide or phosphate throws down in insoluble form the organic substance constituting the peptic ferment.

"(k) Partial precipitation in insoluble form of some of the organic matter of food may probably also be brought about by the presence of the aluminum compounds in question.

"(l) From the general nature of the results obtained, the conclusion may fairly be deduced that not only alum itself, but the residues which its use in baking powder leaves in bread, can not be viewed as harmless, but must be ranked as objectionable, and should be avoided when the object aimed at is the production of wholesome bread." (565, 566.)

Regarding Professor Mallet's conclusions, Dr. CRAMPTON, chief of the division of chemistry in the office of the Commissioner of Internal Revenue, says: "I may say that most of those based upon purely chemical work I can indorse, having confirmed many in my own work; but I think the evidence furnished by his physiological work is hardly sufficient to justify his conclusions as to the harmfulness of such powders." (624.)

Surgeon-General VAN REYPEN, of the United States Navy, says that the alums in baking powder are unquestionably injurious to the digestive system and produce chronic dyspepsia. (615.)

Supervising Surgeon-General WYMAN, of the Marine-Hospital Service, bases the opinion that alum should not be used in food products, such as baking powder, upon the fact that alum applied locally to a mucous membrane is astringent and irritant. He says that alum baking powder is not issued by the Marine-Hospital Service. (616.)

Professor APPLETON, of Brown University, believes that the use of alum baking powder results in painful and serious disturbances of digestion. (619.)

Professor TUCKER, of the Albany Medical College, is of opinion that alum in bread making or in baking powder is injurious, hardening the gluten of the flour and retarding digestion. In those whose digestion is already enfeebled alum preparations may cause grave disorders. (618.)

Medical Inspector PRICE, of the United States Navy, thinks that the daily use of alum, even in small quantities, would have an injurious astringent effect, and that cream of tartar is comparatively harmless. (619.)

Surgeon-General STERNBERG and Deputy Surgeon-General SMART, of the United States Army, say that while the injurious effect of the residua of alum baking powder is a matter of dispute, and while it is difficult to connect dyspepsia in the human subject with the use of alum baking powder, many laboratory experiments support the view that digestion is impaired by the presence in the stomach of the substances formed during the decomposition of alum. They consider that the public welfare would be improved by the exclusion of alum from all bread-making materials. No alum baking powder is furnished to the Army. (607.)

Dr. CUTHERBERT has given no particular attention to the subject, but from the consensus of opinion of medical men his judgment is that the continued administration of alum is harmful. (609, 610.)

Mr. THURBER states that the firm with which he was formerly connected was a considerable manufacturer of baking powders, and was under great temptation to make an alum powder on account of the cheapness of the material. It investigated the subject as carefully as it could with this in view. It came to the conclusion that while the use of a single loaf of bread made with alum powder might not produce noticeably bad effects, "the cumulative effects of mineral substances like alumina would in time be very deleterious." (581.)

Dr. KERR, formerly health officer of Chicago, is satisfied, from analyses presented for his inspection and from the results upon the human system which have been brought to his attention, that alum in food stuffs, particularly in baking powders, is deleterious to health. It impairs digestion, produces many digestive disorders, causes constipation, and impairs the action of the kidneys and bladder. He regards it as an insidious cumulative poison, and believes that continued use will eventually become a menace to life itself. (605.)

Dr. FLEMING, a physician, regards the use of alum in baking powder or otherwise in baked foods as injurious in several ways. It hardens the gluten of flour, impairs digestion, and induces constipation. Excessive use of it produces visceral inflammation and enteritis. It also produces functional derangement of the kidneys and bladder. (604.)

Professor CORNWALL, of Princeton University, regards alum in baking powder as objectionable on the ground that under certain conditions it may exert an injurious effect on the digestion. "The effects may not be very marked in the case of any individual consumer, but that they can be induced to a greater or less extent seems to be well established." (618.)

Dr. McMURTRIE says that the healthfulness of alum in food has been carefully considered by various governmental and State authorities, boards of health, and food commissioners, and that such authorities have never indorsed the use of it. Dr. McMurtie says that the various organs of the body perform their functions largely by diffusion, and when the aluminum compounds are subjected to diffusion it is found in many cases that the acid constituent passes through the dialyzing membrane and the aluminum is left behind. Because of the difficult diffusibility of the compounds they will not pass through the organs as rapidly as other substances, and the repeated periodical injection of them would produce an accumulation which would interfere seriously with the functions of the organs.

Dr. McMurtie says that it is stated by Professor Kobert, of Dorpat, Germany, that alumina compounds in the blood, practically irrespective of the combination in which they are found there, produce distinctly poisonous effects; that these alumina compounds when taken into the system may be found in the principal organs, as the liver, the spleen, the kidneys, and even the brain. Dr. Kobert is further said to have shown that the poisonous action of the alumina compounds is very slow, and that intense nervous disturbance may ultimately occur, though no symptoms are observed for several days after the compounds are introduced into the blood. (597, 598, 601.)

Dr. JOSEPH TABER JOHNSON, a physician, speaking of alum itself, says that if it were introduced into the system in bread or baking powder it would interfere with digestion. Even a small dose used continuously would be dangerous. (615.)

J. Other uses of alum (see also *Pickles*, p. 66).—1. *To whiten bread.*—Dr. WILEY says alum is sometimes used in bread making, where yeast is used, to whiten bread. (46.)

Dr. STRINGFIELD says alum is commonly used to improve the appearance of bread; principally by bakers. (549.)

Dr. CRAMPTON, in discussing the use of alum by bakers to improve the appearance of bread, quotes one authority who says: "The influence of alum on health, in the small quantities in which it is usually added to bread, is very problematical, and rests upon theory more than observation." Another authority says: "Whether

there be sufficient foundation for the statements made respecting the injurious effects of alumed bread on the system is still an open question." Another, however, says that when it is used "a large portion of the gluten and other valuable constituents of the flour are never properly dissolved, but pass through the alimentary canal without affording any nourishment whatever." (622, 623.)

Mr. PETRAENS says that bakers have often used a very inferior flour and added alum to improve the appearance of the bread. The quantity of alum is too small to do any harm. The real harm consists in using wormy and poor flour and passing it upon the public as a good article. (292.)

2. In the filtration of water.—Professor AUSTEN says that alum is used on a large scale in the filtration of water. It combines with the dissolved bicarbonate of lime, producing carbonic acid gas and gelatinous hydrate of alumina. The latter substance is precipitated and gathers the fine suspended matter, forming with it masses large enough to be removed by a sand filter bed. This process is used in Atlanta, in Kansas City, and many other places throughout the country. It would be unlawful under the terms of a law which should forbid the use of alum in the preparation of food. (533, 534.)

Professor MALLET regards the use of alum in purifying water as of doubtful wisdom. He would hesitate to use water treated with alum in the proportion in which it is generally used. He was about to recommend to the city of Richmond, Va., to substitute salts of iron for salts of aluminum for this purpose. Yet the quantity of alum so used is very minute—not more than one or two grains and often only a fraction of a grain to a gallon of water, and this is intended to be precipitated. Even if the whole amount remained in the water, it would be less than is used in alum baking powders. (555.)

K. Use of alum prohibited in European countries.—Dr. McMURTRIE, consulting chemist of the Royal Baking Powder Company, says that the use of alum in food, in any form and in any quantity, is absolutely prohibited in England, France, and Germany. (600.)

Dr. CRAMPTON, chief of the division of chemistry in the Treasury Department, says: "For a proper understanding of the alum question it is necessary to explain that the use of alum in bread making is prohibited in countries having food-adulteration laws, such as England and France. This is partly on account of its injurious effect upon the system, but principally because of its peculiar action, not yet well understood, in improving the color and appearance of the bread to which it has been added, so that a flour of inferior grade, or even partially spoiled, may be used to make bread which will look as well, to all appearances, as bread made from much better grades." (622.) (See also *State laws*, p. 110.)

L. Proposed legislation.—*1. Labeling.*—Dr. WILEY says all baking powders should be marked to show their constitution, whether cream of tartar, acid phosphate, or alum baking powder. He would not say that alum powder should be absolutely prohibited. (47.)

Professor MITCHELL, chemist to the dairy and food commission and the State board of health of Wisconsin, thinks that at least the public should be plainly informed when baking powder contains alum. If one has a prejudice against using these astringents he should have the right to be protected. Aside from the question of wholesomeness, he considers the desirability of labeling alum baking powders "alum" undoubted, because a fraud is committed in selling the cheaper substances for the more expensive ones. (107-109.)

Professor PRESCOTT is inclined to think that any baking powder other than that made by mixing cream of tartar and bicarbonate of soda and a due quantity of filling should have its composition announced on the package; at any rate, he is very sure that any baking powder containing alum, if allowed to be sold, should have the presence of the alum clearly stated. (196, 197.)

Mr. REW, vice-president of the Calumet Baking Powder Company, considers it just that all products should be labeled to show what they contain, and the public informed of the chemical action which takes place. In labeling baking powder the most just way would be to require the manufacturer to print upon his label the names and amounts of substances left in the food, so that the consumer might know that when he takes foods prepared with cream of tartar baking powder he is taking seidlitz powder, and that when he takes foods prepared with alum baking powder, he does not get any alum, but gets Glauber's salts (sulphate of soda). (88.)

Mr. MARC DELAFONTAINE, a chemist, says requiring the formula to be printed on the label would be all right if people were well educated and understood the chemical changes, but so long as they are not, they are frightened by the word alum. The label might give the formula or the contents in a general way, and then the maker might state that there is nothing injurious in the use of the substance. (230, 231.)

Professor EATON, formerly chemist to the Minnesota dairy food commission, advises that all baking powders be labeled with the minimum percentage of gas they are calculated to evolve, after the manner of laws on this subject in the East. He would not put the formula on the label, because he believes the formula to be the property of the inventor; but he would label the various classes of baking powder with the class to which they belong, whether alum, alum phosphate, cream of tartar, or pure phosphate, all of which differ in the residuum which they leave in the bread. He hardly thinks it fair to require a label, "This powder contains alum," as is done by Minnesota, Wisconsin, and several other States, at least until the fact that alum is positively injurious is established, because it conveys to the purchaser the impression that it is harmful and inferior. If it is injurious, it should be prohibited, and if not, it should be given the same right as any other class of powder. (236.)

2. Prohibition of alum powder.—Dr. PRESCOTT, in a statement submitted in January, 1900, refers to his earlier testimony, in which he expressed the opinion that if alum baking powder were allowed to be sold, the presence of alum should be clearly stated on the package, and said that in his present judgment the sale of baking powders or other articles of food containing alum should be prohibited. (625.)

Assistant Surgeon FREEMAN, U. S. N., believes that the use of alum baking powder and the use of alum by bakers should be prohibited by law. (620.)

Dr. JOHNSTON unqualifiedly unites with those who ask for the prohibition of the use of alum baking powder. (626.)

Dr. WISE desires the prohibition of the use of alum in any article of food. (627.)

Professor FAIRHURST thinks the use of alum in baking powder should be prohibited by law. (620.)

Dr. KERR would favor making the use of alum in baking powder a felony, punishable by fine and imprisonment. (605.)

Dr. APPLETON believes that the manufacture and sale of alum baking powders should be prohibited. (619.)

3. Bread without baking powder.—*1. Fermentation.*—Professor MUNROE, of the Columbian University, is of opinion that the most wholesome method of converting flour into bread is by the process of fermentation. (608.)

2. Saleratus.—Mr. REW says that in the preparation of soda biscuits the cook uses a uniform quantity of saleratus baking soda and an indefinite quantity of sour milk, which may be at one time very acid and at another time weakly acid. If she uses more soda than her sour milk will take care of, the biscuits are yellow. If she uses too little soda or too much milk, the biscuits are white and bleached. In using baking powder prepared on chemical lines the residue is the same, whether 2 teaspoonfuls or 1 be used to a quart of flour. (105.)

IV. BUTTER, OLEOMARGARINE, AND OTHER ANIMAL PRODUCTS.

A. Renovated or process butter.—Mr. NORTH says that the making of process butter consists in the "rendering" of dairy butter at a temperature of from 110° to 130°, washing it with water, and so obtaining a neutral oil, and churning the resulting fat with milk or cream to give a flavor. This flavor is "not a component part of the mass, and in consequence it goes away in the air. You buy butter to-day and it has this flavor; to-morrow it is gone. Some makers make it so that it lasts a week, others so that it will last only until to-morrow."

Mr. CRACKÉ, deputy commissioner of agriculture of the State of New York, says that the law of that State requires such butter to be labeled in large letters, "Renovated butter." (479, 480.)

Mr. DUFF, chemist of the New York Produce Exchange, says that all classes of butter, irrespective of condition, are collected and remelted at as low a temperature as possible and then rechurned with milk. The butter is washed, the rancid acid is largely eliminated, and the rechurning brings back the natural texture and appearance as far as possible. The product is called renovated butter. It is not detrimental to health, but it is a fraud. (498.)

Mr. C. Y. KNIGHT says new process butter is made from farmers' butter by taking out the brine, the casein, and other matter which may have become tainted or stale, and replacing it. The butter is taken to factories, melted down, salted, the water precipitated, and rechurned in an emulsion of skimmed milk, as oleomargarine is churned to give it the butter flavor, the flavor of butter being in the casein. The different makers of process butter have different systems. No chemicals are used. Mr. Knight has had a number of samples of this process butter analyzed, and, so far as the component parts are concerned, it has been called pure butter; but it can be detected under the microscope from the fact that the fats are emulsified. (170.)

Mr. STERNE says butter which is green and moldy, blue and white, and all sorts of colors, is picked up on the street at the lowest price, melted down and settled in a kettle, put through a soda process, re-washed, handed out onto a table through ice water, put through a worker, recolored, resalted, and sold. He has examined it on Water street, where it is known as imitation creamery. It contains alkali from the use of soda, and is absolutely unfit for anything except to settle salt. Mr. Sterne says he knows of a number of firms supposed to be in the business of washing gangrened butter. (221, 226.)

Mr. Sterne says grease butter has rarely been below 9 cents a pound, because washers take it and work it over and put it on the street as butter for food to the extent of thousands of tons a year. Mr. Sterne states, as the result of observation, that sal soda and salicylic acid are used in its preparation. (227.)

B. Oleomargarine.—*1. Ingredients and process of manufacture.*—Dr. WILEY has found that other fats, both animal and vegetable, including mixtures of cotton-seed oil and beef fat, and sometimes a high grade of pork fat, have been substituted for butter fat, and that these compounds were often sold as pure butter before the passage of the oleomargarine act, which compelled the stamping and branding of such packages. He thinks that where the act has been enforced it has protected the public and the farmers against fraudulent adulterations. (18.)

Professor MITCHELL says oleo oil is extracted from beef stearin and mixed with neutral lard to make butter imitations. Some years ago there was butterine with considerable actual butter in it, but now there are very small percentages of butter. Butterine with butter in it would cost considerably more than that made of cheap oils. (126.)

Mr. STERNE, a commission merchant of Chicago, formerly in the oleomargarine business, says the manufacture of oleomargarine was begun in this country in 1879, and it is made to-day almost exactly as it was at that time, out of the purest fats; it has no adulteration in it whatever. Ever since the beginning of its manufacture it has been known as a compound of beef fat and lard, sometimes with cotton-seed oil. The hog product gives the grain. It was formerly adulterated with butter, but so little pure butter could be bought that the manufacturers had to go back to cream, and no oleomargarine maker now uses any butter. The fats from the bullock are cooked, and the tallow element withdrawn by a mechanical process, leaving butter fat, absolutely the same as that produced from the milk, as far as chemistry has been able to determine, and far superior for the reason that there is no deterioration, while butter begins to deteriorate at once. Every butter man who takes an exhibit to a fair insists upon judgment within twenty-four hours. Oleomargarine makers churn cream with the butter fat to give it the aroma caused by the action of the bacteria in milk. Rich cream is used; it is guaranteed in the contracts to produce 20 pounds of butter to the hundred pounds of cream. Mr. Sterne quotes the official chemists of the Austrian Government as saying that the only germs ever present in oleomargarine are those common to air and water, and that the product is especially liable to contamination because the best process of manufacture fails to eliminate all the lactic-acid ferment.

Mr. Sterne believes that oleomargarine has never had an adulterant. It has never had a chance to be fairly known, because of the objectionable articles in the press and in the dairy papers. He says the difference in the grades of oleomargarine is due to the quantity of milk and cream churned with it, the proportions of fats being nearly always the same. (221-228.)

Mr. Sterne buys materials for oleomargarine makers, and he wishes "to emphasize the strict examination and purity that is required, not only by the manufacturer of the raw material, but by the manufacturer of the finished product, in all materials which go into butterine." The witness believes that England has as good food laws as any country, and the larger part of the oleomargarine fat and neutral manufactured here is sent to the other side. (341.)

Mr. MILLER, manager of the butterine department of the Armour Packing Company, Kansas City, says that butterine is composed of oleo oil, neutral, butter, cream, milk, and salt. Highly refined cotton-seed oil is sometimes used in limited quantities in the cheapest grades. In the better grades butter is always used.

Oleo oil is made from the caud fat, the richest and choicest fat of the beef. This fat amounts to about 40 pounds to the animal. It is taken out before the animal is skinned, thoroughly washed, and thrown into a vat of ice water, to stand until the following day. Then it is cut up fine and cooked. The fat is cooled and placed in linen cloth., and the oil is extracted in a hydraulic press. The residue in the cloths after pressing is commercially known as stearin. Neutral is the leaf lard of the pig. The leaf, amounting to about 5 or 6 pounds to the pig, is taken out as soon as the animal is killed, thoroughly washed, and put into a freezer for 24 hours. It is then cut into shreds and cooked. Neutral is snowy white, without

taste or odor. Both pigs and cattle are examined by Government inspectors, before and after killing, so that diseased animals are excluded. England, France, Germany, Holland, and other foreign countries where butterine is manufactured more extensively than in the United States depend entirely upon American packers for oleo oil and neutral.

The ingredients of butterine are churned together for 30 minutes in large steel churning. The butterine, which is then in a liquid state, is chilled by passing through ice water, thoroughly worked to get the moisture out, and packed in tubs and cases. The law requires, besides plain marking of the packages, a record of every pound of material used and a record of every sale, giving the amount, and the name and address of the purchaser.

Butterine is colored with Wells-Richardson improved butter color, which is used almost exclusively by every creamery man in the United States. The salt is the celebrated Ashton brand, imported from England. The cream, milk, and butter are the best that can be bought, and especial attention is given to the handling of the cream and milk. All the apparatus used in the manufacture is kept scrupulously clean. All vats, trucks, tables, molds, and floors are thoroughly scrubbed with hot water once or twice a day. Each tub is steamed and scrubbed in hot water before being used. None of the laborers are allowed to use tobacco while at work. (822-824.)

Mr. PIRRUNG, a manufacturer of butterine, states that he buys all his oleo oil and neutral from the packing houses. Oleo oil is obtained from the caud fat of beef, and looks much like yellow butter. It is shipped by the packers in new tierces. The packers never use a secondhand tierce for it. The neutral is made from the leaf of the pig, and is nut-like in taste and positively neutral in odor. These two ingredients are the basis of the oleomargarine or butterine. They are churned in a steel or tin churn, run through cold water, worked in a butter worker, and wrapped in new cloth or parchment-paper packages. The Government prescribes that all oleomargarine must be put up in new wooden packages and branded with the word "Oleomargarine," in letters 1 inch high, with the name and location of the factory and the gross and net weight. The only ingredients are the oleo oil or beef fat, the neutral or pork fat, milk, cream, salt, and coloring. The color is made from the annatto bean. It is a purely vegetable product, and no chemical dyes are used. (818-815.)

Mr. DADIE, general manager of the William J. Moxley Butterine Company, says that this company buys its oleo oil from the packers, but makes it neutral. It formerly used butter in making all grades of butterine, but found it too hard to get butter for the purpose. It now uses milk and cream in the cheaper grades, though butter is still used in the best. Its butterine is colored with the Wells-Richardson improved butter color, which is used by creamery men generally. (825, 826.)

Mr. JELKE, general manager of Braun & Fitts, states that this corporation makes more oleomargarine than any other establishment in America. It does not use any cotton-seed oil. It considers that vegetable oil can not carry the butter flavor. Mr. Jelke believes that all the other butterine manufacturers use more or less cotton-seed oil in the lower grades. It is entirely wholesome. No preservative or chemical of any kind except salt is used in the witness's factory. The wholesomeness of the product is attested by the fact that Mr. Jelke uses it on his own table, and that the men in the factory, who know the whole process of manufacture, use it in their families. (832, 833.)

Mr. POTTER, manager of the butterine department of Swift & Co., and Mr. THOMPSON, manager of the butterine department of the G. H. Hammond Company, give testimony precisely similar to that of other manufacturers with regard to the materials used in the manufacture and the cleanliness of the process. (835, 837.)

Professor MITCHELL knows of no way by which tallow from refuse or from dead animals picked up on the street can be distinguished from the tallow from healthy animals, except by its general odor and appearance. The oils used in the better grade of food products are carefully kept from becoming tainted and rancid. The price of the product is lessened rapidly if tainted oils are used. (127.)

2. *Wholesomeness.*—Dr. WILEY testifies that from a nutritive point of view all the fats and oils used as food have nearly the same value as heat producers. Butter fat has a heat value of a little more than 9,000 calories per gram, while the beef fat of oleomargarine has a slightly higher heat value; but the butter fat is a little more easy of digestion, so that there is practically no difference in the value of the two fats in the human economy. Cotton-seed oil has practically the same heat value as oleomargarine, and is probably a little easier of digestion. Dr. Wiley considers mixtures of animal fats and vegetable oils to be perfectly

wholesome, but objects to the payment of fancy prices by persons in straitened circumstances who suppose they are getting butter when they are not. (14, 16.)

Mr. MARC DELAFONTAINE regards oleomargarine as substantially similar to butter in its chemical constituents, but not identical with butter. He thinks it equally wholesome. The manufacturers are bound to use the very best grades of fats or else the article will not sell. Anything inferior would be either rancid or bad to the taste. He does not think the best butterine equal to the best butter, but says there are grades of butter which are inferior to very good or average butterine. (281.)

Mr. HOBBS, editor of the National Provisioner, says: "In our analyses we find that the legitimate butter compounds are healthy in themselves; that is, they are free from deleterious substances; they are made of animal and vegetable fats—some of them, the best quality of them—and are sold as such." (496.)

Mr. DUFF, chemist of the New York Produce Exchange, regards butterine and oleomargarine, "made from perfectly good material under Government supervision," as legitimate products. (500.)

Professor CHITTENDEN regards the oleomargarine industry as perfectly legitimate, but thinks that oleomargarine should be labeled to show what it really is, and that dealers should be compelled to sell it under its proper name. (428.)

Professor MALLET says that oleomargarine is a good and wholesome food, and in some cases, as on long sea voyages, it is used in preference to butter. But it ought not to be called butter or sold as such. (556.)

Mr. STERNE read the following extract from the Scientific American:

"In everyday life butter is very essential. Its free use by sufferers from wasting diseases is to be encouraged to the utmost, in so far as it can be borne. All this seems very simple, but, unfortunately, an excess of butter diet, even in a healthy organism, is likely to give rise to butyric dyspepsia, and butyric fermentation is set up largely through the presence of a ferment, a residuum left by the buttermilk.

"Considering the foregoing, it seems strange that oleomargarine has not been thought of as a palatable and suitable article of diet for those suffering from wasting diseases. It is free from all objections, despite the idle and malicious tales spread by parties interested in securing higher prices for inferior and unwholesome products. Were the truth fully realized by all classes, bad butter would find no market; but, unfortunately, the majority of the people have no comprehensive idea as to what oleomargarine practically is.

"The resulting product, as a matter of fact, is a better and purer butter than nine-tenths of the dairy product that is marketed, and one that is far more easily preserved. There are a large number also who imagine that oleomargarine is made from any old scraps of grease, regardless of age or cleanliness, which is quite the reverse of the fact; indeed, a good 'oleo' can only be had by employing the very best and freshest of fat. This 'artificial butter' is as purely wholesome (and perhaps even better as food) as the best dairy or creamery product." (222, 223.)

Mr. MILLER introduced in connection with his testimony opinions said to have been given by Professor Caldwell, of Cornell University; Professor Atwater, of Wesleyan University; Professor Schweitzer, of Missouri State University; Professor Barker, of the University of Pennsylvania; Professor Johnson, of Yale University; Dr. Ames, of the United States Navy, and Professor Jolles, of Vienna. Professor Caldwell says that the process of making butterine, when properly conducted, is cleanly, and that the product possesses no qualities whatever that can make it in the least degree unwholesome. Professor Atwater says that butterine is perfectly wholesome and has a high nutritious value. Professor Schweitzer states that careful physiological experiments reveal no difference whatever in palatability and digestibility between butter and the brand of butterine which he has examined. Professor Barker considers butterine quite as valuable a nutritive agent as butter. Professor Johnson says that for all ordinary and culinary purposes it is the full equivalent of good butter made from cream. He regards the manufacture of oleomargarine as a legitimate and beneficial industry. Professor Jolles says that pure butterine or oleomargarine is as digestible and nutritive as pure butter. Dr. Ames declares that the manufacture of butterine in properly constructed factories is much cleaner than the manufacture of butter, and that he has found the factories at Kansas City nearly perfect in that respect. He says: "It should be more generally used, and not looked upon as an inferior article and makeshift for butter, when it is really superior." (348-350.)

Mr. PIRRUNG, a maker of butterine or oleomargarine, says he has read that 60 per cent of the higher-grade dairy cows of Illinois, such as Holsteins and Jerseys,

have tuberculosis. Every beef cow which goes to any prominent packing house has to pass Government and State inspection. Dairy cows are not inspected in any such way. Beef products, such as go into oleomargarine, are much more likely to be wholesome, in Mr. Pirrung's opinion, than dairy products. It is true that milk is used in oleomargarine, but it is pasteurized. The food commissioners of the several States have never attempted to show that oleomargarine contains anything deleterious. The present food commissioner of Ohio has repeatedly examined the products of Mr. Pirrung's factory, and so have his predecessors. They have said that they would prefer butterine to what they term ordinary butter. Oleomargarine is superior to butter in keeping qualities, partly because all the ingredients are cooked. If it is properly made it can never get rancid, though it may lose its flavor. (814, 816, 839, 840.)

Mr. Pirrung declares that it is utterly impossible to make butterine out of putrid or rancid fats. He defies anyone to say that he has ever seen or even heard of a piece of rancid butterine. And on the other hand, he has heard it stated that rancid butter is absolutely poisonous. Mr. Pirrung asserts that for about eight months in the year butterine sells for more than the average grades of butter. If butterine were as cheap and as ill-made as a large amount of the poor butter on the market it would find no sale. (818, 821.)

Mr. BROADWELL, as a dealer in butter and oleomargarine, says that the finest of creamery butter turns strong in two or three days, as most people keep it in their pantries, and they bring it back and say, "This is oleomargarine." It will not keep even in ice boxes, while a pail of oleomargarine will last a month in warm weather. The cream and butter put into the higher grades of oleomargarine make it sweeter and nicer, but the inferior quality will keep longer; the more cream there is the shorter time it will keep. Dealers are not allowed now to use the word "butterine;" the name was changed to oleomargarine to avoid deception. A certain class of people would not ask outright for oleomargarine. (158-166.)

3. Sale as butter.—a. Affirmed.—Professor FREAR states that the sale of oleomargarine as butter was found "pretty common" in Pennsylvania. (529.)

Mr. HOBBS, editor of the National Provisioner, says that there is a disposition on the part of some tradespeople to remove the labels from food products, and even to transfer an article from its own package into another. He has himself visited a place where oleomargarine is put into a butter package and labeled creamery butter. Oleomargarine is a legitimate article of commerce, but an 18-cent article ought not to be sold under the name of a 25-cent article. (495, 496.)

Mr. KNIGHT read circular letters from manufacturers of butterine, one of which offered certain brands "in plain wrappers." Another advised dealers to push the sale of "the only high-grade" butterine, "and build up a reputation for good butter." Another said: "Your profit will be double the amount made from the butter you are now handling, and your butter trade will be more satisfied if you will sell them such butterine as you can buy from me." Another offered butterine of various colors to be selected from a color card, mentioning the difference in the color of butter at different seasons. (146-149.)

Mr. Knight submitted to the committee 4 packages of oleomargarine bought in Chicago stores for creamery butter. The first was not stamped; the second and third were marked oleomargarine, but the marks were concealed by folding; on the fourth the word "oleomargarine" was printed on the inside of the package. (139-141.)

b. Denied.—Mr. CLIFF, at whose store the unmarked package of oleomargarine submitted by Mr. Knight was purchased, says the instructions of the house are that every piece of paper used on oleomargarine shall be plainly marked. If a customer asked for creamery butter, he would not knowingly sell him butterine. He has in his store the Government sign, and the sign "Butterine department." (154, 155.)

Mr. POLLAK, at whose store one of the packages of oleomargarine submitted by Mr. Knight was purchased, says he does not furnish oleomargarine to persons who call for creamery butter. He paid 18 cents a pound for the oleomargarine and sold it for 18 cents a pound. (152.)

Mr. BROADWELL, a dealer in butter, oleomargarine, and cheese, from whom one of the packages of oleomargarine submitted by Mr. Knight was purchased, says he believes that his men put the stamp on the package plainly. He explains his custom with reference to the sale of oleomargarine as follows: "When a man says 'I want strictly A1 pure butter,' we show him pure butter, and if it is good enough for him he buys it. If it is not, we show him something else. If he prefers this oleomargarine in preference to the pure butter, we give him that. We tell him to taste it, and if it suits him he pays us for it, and if it doesn't suit

him he gets out. We have pure butter and butterine also, and if a man will taste of both and prefers this in preference to pure butter, that is what he wants. * * * They don't want any butterine, but if we let them taste of it, and ask them, 'Does that suit you?' they say, 'Yes.' Then they take it home and become steady customers." The oleomargarine is taken out of the original stamped package before the customer's eyes. A man who pays 15 or 18 cents knows what he is getting, because he knows he would have to pay 20 or 25 cents for A1 butter. Some millionaires would buy oleomargarine. (158-166.)

Mr. SOMES, of Chicago, a dealer in butter, eggs, and cheese, says the majority of people come in and want oleomargarine or butterine, but they say "Give me some butter." He thinks the majority of his customers understand that they are getting butterine or oleomargarine. For a long time he stamped his packages all on the outside, and his customers would say, "What is this? I don't want this. Give me another wrapper." They did not want to carry it along the street with a sign on, and to accommodate them it was necessary to put on another wrapper. Then the agents of the butterine people advised him that if he stamped his paper that was all that was required. The majority of people want butterine and do not want a sign on it so that everybody knows they are buying butterine. Witness thinks the reason that they buy it is because it is the only thing they can get that is sweet and good. The price of butterine runs from 15 to 18 cents. (151, 152.)

Mr. STERNE says he has been out of the oleomargarine business for 10 or 12 years, but has had oleomargarine on his table every day since then. In the district where he lives there are 35 grocery stores, every one of which has a butterine or oleomargarine sign. He thinks there is practically no deception in the sale of oleomargarine by retail grocers, though there are some dishonest people in every line of business. Hundreds of people send to the factories for 10-pound packages of oleomargarine, but do not go to the grocery store for fear it will be found out that they are using oleomargarine. (225, 226.)

Mr. PIRRUNG denies that the trade in oleomargarine is a secret trade. He presented samples of cards advertising butterine, of one of which he asserted that more than 5,000,000 had been printed and circulated in the United States, and of another of which 2,000,000 had been used within the past year. Fabulous amounts have been spent, according to Mr. Pirrung, to advertise this product and bring it prominently before the people of the United States. (319, 320.)

Mr. Pirrung declares that he does not know of a single instance in which a consumer has himself charged that butterine has been sold fraudulently for butter. The charge has always been brought by persons selfishly interested in destroying the manufacture and sale of oleomargarine. (338.)

Mr. DADIE says that this company has devoted a great deal of attention to advertising its products. It has distributed probably 500 large posters in Chicago alone, saying, "Ask your grocer for Moxley's high-grade butterine." These posters are about 10 or 20 feet in size. Every package of butterine is marked with the word "Oleomargarine," as required by law. The company also puts up butterine in 1-pound and 2-pound prints, and puts the word oleomargarine on them. The company advises its customers to comply with all Federal legislation. Mr. Dadie admits that the company is fighting some State laws, and that if anyone attempts to persecute its customers it will defend them. (326-328.)

Mr. POTTER, manager of the butterine department of Swift & Co., says that this concern puts up butterine both in wooden packages and in 1-pound prints. Not only the large package, but every printed wrapper, when the form of prints or rolls is used, has the word "Oleomargarine" printed plainly on it. Referring to the statement that manufacturers of butterine guarantee protection to dealers who sell butterine as butter, Mr. Potter denies that Swift & Co. have ever made any promises of that character, and asserts that it is their policy to sell the product strictly on its merits, and to create legitimate demand for it; and that they use all their influence to have it sold for what it is. (336.)

Mr. THOMPSON, manager of the butterine department of the G. H. Hammond Company, asserts that this company has never encouraged or defended the retail dealers in selling butterine as butter, and will not protect them in it. When it puts up the goods in printed wrappers the wrappers bear the word "Oleomargarine." (338.)

Mr. MILLER declares that his company has spent as much as \$25,000 a year in advertising its butterine. Its billheads read "Butterine," and it puts up large advertising signs. There is nothing secret about the marketing of its goods. Mr. Miller says that butterine is demanded because it is an article of merit, and is sold for what it is worth. In the summer many people buy it who can not afford to have ice boxes. It keeps where butter would not. (324.)

Mr. JELKE, general manager of Braun & Fitts, oleomargarine manufacturers, declares that the belief of his concern is that the interests of the butterine manufacturers will be best served by having the goods sold to the consumer for what they are, and letting the consumer know what he is buying. Braun & Fitts send out thousands of circulars, pamphlets and cards to advertise their product. (333.)

Mr. STERNE, a commission merchant who buys materials for oleomargarine makers, declares that he is very close to these manufacturers, and that he believes that their earnest efforts are directed to creating a demand for butterine rather than for butter. (342.)

Mr. ADAMS, speaking from an experience of 4 years in administering the dairy-food laws of Wisconsin, says that while the wholesalers and jobbers of oleomargarine know what they are selling, and the retailers and keepers of boarding houses and restaurants know what they are buying, the boarders in boarding houses and cheap restaurants do not know what they are buying when they call for butter and get butterine. The butterine is finally consumed for butter, and could not be sold if it were not colored in imitation of yellow butter. (208.)

4. Effect on the price of cattle, etc.—Mr. STERNE, a commission merchant, believes that the demand for the fats used in making oleomargarine has raised the price of cattle and hogs throughout the Union, although the production of butterine is only about 6 per cent as great as the production of butter. (341.)

5. Coloring matter—(See also *Coloring materials*, p. 91.)—*a. In butter*.—Mr. KNIGHT says that in the flush of the season there is very little, if any, coloring matter used in butter, but that in the winter butter is almost universally colored, solely for uniformity. He does not think this is a deception at all. Consumers do not want butter white at one time and yellow at another; but butter shipped to England must be as white as it can be made. (141-143.)

Mr. PIRRUNG says that 25 years ago butter was of all kinds of colors, but now it is universally colored artificially. The object is the same as the object of coloring fine confections; namely, to make the product more pleasing to the eye and so more acceptable to the taste. (317.)

b. In oleomargarine.—Mr. KNIGHT says that 33 States have enacted anticolor laws, but in the face of all this State legislation, the production of oleomargarine has doubled in one year, because it is of such a deceptive character that it is absolutely impossible to keep track of it after it leaves the manufacturer. He says there is absolutely no way of compelling the sale of oleomargarine as such as long as it is permitted to be colored in imitation of butter. He speaks of a raid among the retailers in Philadelphia in which 100 dealers were found to be selling oleomargarine without licenses. The Government was actually losing revenue through failure to identify the article. Mr. Knight says there is no such thing as selling uncolored oleomargarine. No one ever saw it except in a few places where it has been experimented with, and people would not consume it if they knew it was oleomargarine. (139, 141.)

Mr. Knight says that the Supreme Court of the United States has twice held that it is a deception to color some other kind of compound to resemble butter. (145.)

Mr. PIRRUNG says the highest court of Michigan has recently decided that the law forbidding coloring whereby damage or inferiority is concealed or whereby the product is made to appear better than it is can not be made to apply to oleomargarine, because it is not colored for these purposes. (317.)

Mr. PIRRUNG declares that in his experience of 12 years he has never found an instance in which a chemist has brought into court, in the trial of a butterine case, the actual coloring matter extracted from a sample for the inspection of the court and the jury. (339.)

Mr. MILLER denies that butterine is colored to resemble butter. According to him, when his company began to make butterine in 1881 it gave its product a high color; but this was not to imitate butter, because very little butter was then colored. "In the winter it was almost white; in the summer it was a light yellow or natural grass color. Since the advent of butterine the creamery men have found it necessary to imitate it." (324.)

Mr. STERNE says the object of coloring oleomargarine is to make it attractive to the eye, as in the case of butter; not particularly to make it resemble the highest grade of butter. The popular butter is a bright yellow color, and the more perfectly yellow the butter and butterine makers make their product the more quickly it is sold. (223, 224.)

Mr. BROADWELL says that if oleomargarine were colored pink, not a pound of it could be sold; it has to resemble butter. Coloring it pink would raise the price of pure butter to 40 and 50 cents a pound. (166.)

6. Legislation—*a. In Wisconsin*.—Mr. ADAMS says the law of Wisconsin, which

he drew, prohibits the coloring of oleomargarine in imitation of butter to prevent its sale as a counterfeit. The friends of the oleomargarine interest insisted that the dairy interests were inconsistent, because they colored their butter; but butter is not colored in imitation of any other article or of a more valuable quality of the same goods, but to please the eye. Wisconsin has also passed a law requiring made-over butter to be labeled. It is not possible by any process of coloring to make ordinary or poor butter good butter. (207, 208.)

Professor MITCHELL, chemist to the Wisconsin dairy and food commission, says it is almost impossible to require hotels and restaurants to inform their customers when imitation or adulterated foods are used. In Wisconsin notice to customers is required when butterine is used, but it is not stated how the notice shall be given. Sometimes it is given on the bill of fare and sometimes by signs, and usually the effort is to get the sign in a rather out-of-the-way place. He thinks there are only a few places, in the lumber region in the northern part of the State, where this law is not enforced. In all the larger cities in the southern part of the State it is enforced strictly. (109.)

b. Proposed national anticoloring law.—Professor MITCHELL feels very well satisfied with the Wisconsin law prohibiting the coloring of oleomargarine in imitation of butter, and would like to extend it, in a measure, to all products artificially colored in imitation of other substances. He thinks a national law prohibiting the coloring of oleomargarine would be desirable, as the color assists in deceiving the customer. The objection to coloring butter is not so great, because butter is not colored in imitation of anything else. He thinks that a national anticoloring law would aid in the enforcement of the oleomargarine act. (110, 127.)

Mr. GEORGE M. STERNE, a commission merchant of Chicago, formerly in the oleomargarine business, thinks the use of aniline dyes by either butter or oleomargarine makers should be prohibited, but a law absolutely prohibiting the use of coloring matter in either butter or oleomargarine would hurt the trade in both; the harm would be greater to the butter people than to the oleomargarine people. (224.)

Mr. PIRRUNG thinks that to forbid the coloring of oleomargarine and permit the coloring of butter would be an injustice to the poorer people, who wish to use the cheaper article. If the poor man's little child goes to school with bread buttered with a substance whose color shows it to be butterine, she will be subject to the same sort of comment which she is subject to if she wears inferior clothes. The coloring of butter puts the poor child on equal terms with the rich. (318.)

c. Taxation.—Mr. PIRRUNG says that the taxes upon oleomargarine are unjust, since they simply come out of the pockets of those who desire to use the product. A small license tax, say \$12 a year, might well be laid on retail dealers to secure the registration of them. The high tax which is now laid, \$48 a year, is an unjust burden. The proposed tax of 10 cents a pound upon colored oleomargarine is simply a tax upon a man's taste in respect to the color of his food. To make a man pay 10 cents a pound because he prefers yellow butterine to white is as wrong as it would be to tax him for preferring a black woolen suit to a gray. (320-322.)

Mr. JELKE also complains of the levying of a national tax of \$48 a year upon a little shop before it can sell a pound of oleomargarine—a larger tax than the Government collects from the biggest saloon in Chicago. This prevents many dealers from handling the goods and makes it impossible for many people who want oleomargarine to get it at the stores where they are accustomed to trade. It deprives the people of the privilege of using a cheap fatty food. (333, 334.)

Dr. WILEY says that if the public could be protected against frauds without a tax he would prefer it, as it does not seem to him quite right that persons in straitened circumstances who prefer to use the substitutes should pay excessive taxes upon them. (14.)

Mr. KNIGHT, secretary of the National and the Illinois Dairy unions, has come to the conclusion that nothing can be done about oleomargarine except through an internal-revenue law. He refers to a former internal-revenue law taxing petroleum and regulating the mixture of petroleum and naphtha. Congress repealed the tax, but left the law standing as to mixing, and the Supreme Court decided that inasmuch as the tax had been repealed the regulation was interfering with the police powers of the States and had no standing. (138.)

d. Milk.—*1. Adulteration generally.*—Dr. H. W. WILEY, chief chemist of the United States Department of Agriculture, testifies that the most common form of the adulteration of milk is the abstraction of the cream. Milk is also often diluted with water, and preservatives are used to prevent souring. (18.)

Professor HALLBERG says that various means have been adopted and ordinances passed fixing limits for the amount of fat and solids to be contained in milk. This has done a great deal toward improving the quality of milk. (83, 84.)

2. *Skimmed milk.*—Professor VAUGHAN says a child fed upon skimmed milk may suffer just as much as if a poison were administered to it, by not getting the proper food constituents. (202.)

Mr. MONRED says skimmed milk is not a good food, but an inferior food, and should be sold under its own name and for its value. It is a cheap food and he objects to its being sold as pure milk. In Chicago it may be sold if the cans are tagged. In New York City the board of health allows it to be sold under its own name. (65.)

3. *Coloring.*—Professor MITCHELL showed the committee a sample bottle of coloring matter for coloring cream and skimmed milk to make it look like milk rich with cream. It was made of sulphated aniline. Professor Mitchell says it is not exceedingly injurious, but the object of its use is deception. (115.)

4. *Preservatives* (See also *Formaldehyde*, pp. 95-97; *Boracic acid and borax*, p. 97).—Dr. WILEY says the conditions which obtain in a thunder storm are those in which milk ferments grow with the greatest rapidity; hence the common impression that the souring is due to the thunder. Boric acid and formaldehyde have often been used to prevent souring. (13, 45.)

Professor MITCHELL testifies that antiseptics or antifermenents are used to some extent in milk, butter, and cream; both simple antiseptics and those which are used in connection with coloring matter to give an appearance of yellowness and richness. (111.)

Mr. KNIGHT says that milk that is fed to a child or infant should be absolutely pure, because a child that lives on milk takes enormous quantities. If a child should use a pint or a quart of milk a day containing one-half or three-fourths per cent preservatives, he would get more of the preservative in 1 day than a man would take in butter in 6 months, almost. (251.)

5. *Accidental contamination.*—Mr. HELLER says milk bottles are often taken into sick rooms, where disease germs get into them. The germs thrive very readily in the milk. When the bottles are washed in warm water the germs still remain, and there is great danger of infection in this manner. The use of freezine in a stronger solution than prescribed for milk would prevent this. (176.)

D. *Condensed milk.*—1. *Legitimate manufacture.*—Mr. ROGERS, secretary of the Borden Condensed Milk Company, says that in all his experience of 35 years the product of this company has never been adulterated in any way, and none of the cream has been removed from the milk. The process consists of nothing but the extraction of water and the addition of the finest granulated sugar, made especially for the purpose, free from adulteration and from all coloring matter. The average of solids in the milk used by this company is 18.47 per cent, and the average of fats is 4.7 per cent, while milk which contains 12 per cent of solids, including 3 per cent of fats, satisfies the requirements of the New York law. The Anglo-Swiss Company and some other concerns make condensed milk of the same high standard, but there are smaller establishments which act differently. It is possible to take out one-half per cent of butter fat from the milk and still make a fairly good product; but the honest manufacturer is not fairly treated by such competition. Condensed milk is sometimes made from skimmed milk. That results in the starving to death of children that are fed upon it. It is a crime in New York to skim milk before condensing it, but it is not prohibited in other countries. Europeans were stopped years ago from bringing such products to this country and marketing them here. The Borden Company has given a great deal of attention to stopping the sale of adulterated condensed milk. State boards of health have been appealed to where they exist, and State governments where boards of health did not exist. (440-448.)

Dr. SCOBELL considers the Highland brand of condensed milk a good kind, the manufacturers having their own cows. (52.)

2. *Removal of fat.*—Mr. MONRED, of Winnetka, Ill., a dairy expert, says several brands of condensed milk are really condensed skimmed milk. The butter fat having been extracted, the preparation is adulterated and a fraud. During the World's Fair he made one or two analyses with the Babcock test and found that milk had been fraudulently labeled, containing 2 per cent instead of 3½ per cent of fat. Mr. Monred says there is great danger in condensed milk as a food for children, because it is diluted with water and starves the children. (64, 65.)

Mr. DUFF, chemist of the New York Produce Exchange, says that he has bought a sample of condensed milk which contained hardly any fat. To feed such milk to a child would be to starve it to death. Such adulteration ought to be classed as criminal, even though in one sense it might be called not injurious to health. (497.)

Professor HALLBERG says there is no telling how many infants have been starved to death on milk made from skimmed condensed milk. What the infant needs the first and second years more than anything else is butter fat; the feeding of an infant on skimmed milk is a species of slow murder and should be prohibited. (82.)

3. Need of national legislation.—Mr. ROGERS says that adulterated condensed milk and condensed skimmed milk have been sold in New York to the extent of thousands of cases. Dealers have been tried and fined, and the sale of particular brands of adulterated milk by particular dealers has been stopped in New York; but the milk was shipped to New Jersey or to Pennsylvania or to Connecticut and sold there. The matter can not be effectively dealt with except by a national law. (443.)

Mr. MONRED does not think State laws would be sufficient in the case of condensed milk, because it is used largely on board ships and is shipped from one State to another. He favors a national pure-food law. If that is impracticable, he favors a national law allowing each State to have a trade mark and give the manufacturers a State brand, as suggested in the Sauerhering bill. (65.)

E. Filled Cheese.—Dr. WILEY says it is a common practice to adulterate cheese by abstracting the butter fat and substituting some other fat, making what is known as filled cheese. The added fats are usually pure and wholesome, but less valuable, less palatable, and otherwise less desirable than the natural food, though perhaps not less nutritious. Their substitution is therefore a fraud. (14.)

Professor MITCHELL says filled cheese is not necessarily deleterious to health, but is a much inferior product to oleomargarine from a food standpoint. It is not a permanent or desirable imitation of cheese; it does not ripen normally and it soon spoils. (110.)

F. Lard.—1. Adulteration.—Dr. WILEY testifies that the chief form of adulterating lard is the mixing of vegetable oils or fats and the use of other animal fats, as that of beef, in lieu of the fat of the hog. This mixed matter has been sold very extensively as "refined lard." It is shown by chemical and physiological investigation to be as wholesome as pure lard, but vegetable oils and other fats being less expensive than pork fat, the mixture is a fraud; and it can be sold at a larger profit than pure lard. The witness sees no objection to the sale of any wholesome mixture of fats under their own names. Cotton-seed stearin, for instance, makes an excellent cooking matter, and is preferred by many housekeepers on account of its vegetable origin. At the time he made his investigation the mixture of cotton-seed oil with lard was carried on to a very large extent. (15, 16.)

Professor MITCHELL says lard is adulterated with certain grades of cotton-seed oil, which softens it, and the consistency is brought back by the addition of beef stearin, or, in some cases, of paraffin wax, of which very much less is necessary. Paraffin wax is a petroleum product, perfectly indigestible, and not a food. Beef stearin and cotton-seed oil are not necessarily deleterious to health. (125.)

Professor Mitchell also says that cocoanut oil is used as a lard substitute. It is a clean vegetable oil when properly handled. (127.)

Professor EATON testifies that in 1897 lard was very much adulterated with beef fat and cotton-seed oil. The beef fat was stearin, probably a by-product of the production of oleomargarine. He did not regard this adulteration as injurious to health. (284, 285.)

Professor JENKINS states that out of 162 samples of lard examined at the Connecticut agricultural station 36 were found to be adulterated with cotton-seed oil and beef stearin. (451.)

2. Proposed legislation.—Professor MITCHELL thinks that lard containing paraffin wax should be prohibited, but that beef stearin and cotton-seed oil might be permitted under proper labels. (125.)

G. Canned roast beef.—Professor HALLBERG says that according to the testimony of the men most vitally interested in the manufacture and preservation of canned goods canned roast beef is made by first boiling and extracting a large percentage of extract, the beef residue being then put into cans and subjected to a high heat in retorts, or roasted. This beef he pronounces unfit for food on the authority of Professor Liebig, who found that while the fibrin or fiber is chemically the same as egg white, its digestion and assimilation depend upon the presence of the principles represented in the extract, and that while, therefore, these substances represent the total nutritive quality of the beef, they should not be used singly. Even canned roast beef has a certain use; boiled beef is practically the same thing, but witness never takes boiled beef without horseradish or mustard, and says no boarding-house keeper who knows her business would give it more than once a week, because the substances necessary for complete digestion have been taken out. (81.)

H. Horseflesh.—Dr. WILEY says that the sale of horseflesh has become quite common in many parts of Europe, and it is not always sold as horseflesh. He presumes that horseflesh has been sold in this country for human food. Horses are slaughtered for human food in this country and their carcasses inspected by officials of the Bureau of Animal Industry, but he can not testify whether they were used in this country or not. It would be very easy to palm off horseflesh for beef, especially for the coarser grades. It would take a microscopic or chemical examination to determine the difference. (40.)

I. Fish and Game.—Dr. WILEY considers the sale of one kind of fish for another, as a cheaper fish for a dearer fish, especially when packed in oil, to be very objectionable. The sale of other fish for sardines and the stamping of boxes with foreign stamps are not uncommon practices. English sparrows are sold for reed birds, and other birds are sold for game birds of high value which they resemble. The sale of one kind of duck for another and of other turtles for terrapin is often practiced in restaurants and markets. He characterizes these practices as commercial frauds. (40.)

V. SUGAR AND SWEETS.

A. Sugar.—1. Process of refining.—Mr. SCHILLER, a chemist employed by Arbuckle Brothers, states that the raw sugar is dissolved in water and run over bags or through presses to remove the suspended impurities, and is then run over boneblack to remove the soluble impurities. Then it is crystallized in a vacuum pan. Lime is used after the sugar is dissolved to correct acidity, and some refiners use blood or albumen or other material in its place to clarify the solution by removing the suspended impurities. (430, 431.)

2. Production of certain refiners.—Mr. HAVEMEYER says that the American Sugar Refining Company refines about 70 per cent of the sugar used in the United States, the Arbuckles about 5 per cent, and the other companies about 25 per cent. (467.)

3. Adulteration.—Mr. SCHILLER states that since about 1882 he has never found any adulterant in sugar. He did at that time find a large proportion of granulated glucose in granulated sugar. Arbuckle Brothers' granulated sugar is 99.8 per cent pure; one-tenth per cent may be moisture and one-tenth per cent ash. A mixture of glucose with granulated sugar could be detected instantly.

Mr. Schiller has never seen powdered sugar adulterated with starch or corn flour. He declares that Arbuckle Brothers' powdered sugar is just as pure as their granulated sugar. (431.)

Mr. HAVEMEYER, president of the American Sugar Refining Company, testifies that no ingredients whatever enter into his sugar except raw sugar itself. He does not know of any adulteration of sugar by his competitors. He thinks their goods are absolutely pure. About 15 years ago, on account of the cheapness of glucose, it was used as an adulterant in coffee sugars; but Mr. Havemeyer thinks that this did not succeed and was entirely abandoned. (466.)

Mr. GEORGE W. SMITH has never found any powdered sugar that was pure. He says it is adulterated with corn starch. (134.)

Mr. GALLAGHER says he is told that several food products carry mineraline, and has found powdered sugar adulterated with an insoluble substance. At tables and bars where powdered sugar is used a residue is found in the bottom of the glass. (4.)

Professor TUCKER thinks that powdered sugar is much less commonly adulterated than is popularly supposed. "Probably you could collect a thousand samples without finding other than pure samples." (436.)

B. Maple sugar and syrup.—Dr. WILEY says the high price of maple syrup leads to its artificial fabrication, the common method being to mix it with glucose or with melted brown sugar. The glucose is apt to make the syrup sticky, while the yellow sugar gives a degree of thinness like maple syrup. This product is flavored with an extract of hickory bark or some similar substance, which gives it a flavor similar to that of maple. Thousands of barrels of "pure Vermont maple syrup" have been made at Davenport, Iowa, and other localities where a maple tree never grew except when planted on the street, and these artificial syrups are sold extensively, becoming cheaper and more abundant the greater the distance from Vermont. Dr. Wiley does not think the extracts of hickory bark deleterious in small quantities. The value of maple syrup is not alone in the sugar it contains, but in the peculiar flavoring substance which exists in minute quantities. No one ever heard of refined maple syrup. Refining would take away the flavoring matter and diminish the price. (29.)

Dr. Wiley also says that solid cakes of maple sugar are adulterated very extensively by melting in the yellow sugar from the refineries. In Vermont the practice

of adulterating is not very extensive, the farmers there generally selling the genuine article, though there are mixers even in Vermont. Even the chemist is practically helpless in this case, the amount of flavoring matter being too small to be estimated by chemical means. The maple sugar is boiled until ready for crystallization and then poured into a mold. If this material were passed through boneblack the product would be ordinary sugar, worth about 4½ cents a pound; in the raw state it is worth 8 or 10 cents a pound. (29, 30.)

Mr. SCULLY says pure maple sugar comes principally from Vermont and Canada. In Vermont there is a very stringent law against turning out impure sugar as pure, so he has every reason to think that every package coming from there is perfectly pure. That from Canada he is quite sure is pure, because it is very strong maple. (95.)

According to Mr. Scully, even thick, heavy, natural maple sirup would not keep very well through the summer. It will keep if hermetically sealed, but in the sugar bush facilities for putting it up properly are lacking. Maple sirup is ordinarily made by melting maple sugar, but a great deal comes directly from the sugar bush. The principal object of putting it into sugar is to keep it through the summer. It will keep any length of time as sugar, but the sap would not keep through the summer, and the demand for maple sugar begins in the fall. The D. B. Scully Sirup Company handles three grades of maple sirup. One is guaranteed pure, the others are not; but when they go into a State which has a pure-food law the formula is printed on the outside, showing just what the ingredients are. There is no formula printed on the outside for Illinois, because it is not required. The company sells the goods as they are, not representing them as pure when they are not. The second grade of maple sugar is 60 per cent pure maple and 40 per cent glucose; the third grade has a larger percentage of glucose. Occasionally his company may use a little brown sugar, but not generally. Mr. Scully does not believe that his competitors use any adulterants other than glucose. A great many things have been put on the market as maple flavors, but none of them ever amounted to anything. He never heard of hickory bark being used successfully. Two grades of maple sirup may be brought nearly to the same color by using a darker maple for one than for the other. The second grade of maple sirup sells for about 20 per cent less than the first, and the third grade perhaps 25 per cent lower than the second. The delicate flavor of the maple is not affected by repeated boiling. Mr. Scully's company has melted maple sugar two or three times and found no change in it. In the first operation it loses some of the maple flavor, but not afterwards. Maple sirup which has fermented can not be used again. (90-93, 95.)

Mr. BERRY says that in his experience the greater proportion of maple sirup sold is pure, because as a rule people who eat it pretend to be judges of its quality. But there are probably a good many people who are not judges who never buy anything but adulterated goods. The Chicago Sirup Refining Company lists three grades of maple sirup—one pure, one 60 per cent maple, and one 40 per cent maple and 60 per cent glucose. Some people want 25 per cent maple, so that they can get it at a certain price, and it is made to order for them. The pure sirup is branded "pure," and when sirups go into a pure-food State, such as Michigan, Wisconsin, and Ohio, the formula must be put on. The second and third grades going to a State where there is no pure-food law are simply sold as maple sirup, the merchant who buys them knowing what he is getting from the price. The consumer, Mr. Berry thinks, is misled. A good many people buy the second grade because they can hoodwink their customers and sell it for pure maple sirup. At the stipulated price it requires glucose to bring it down to the cost. (96, 97.)

Mr. ORT COOKE testified that he was endeavoring to produce a substitute for maple-sugar sirup, and produced samples of the product. He said that it was a wholesome vegetable product, composed of two kinds of sugar and a flavor. (237.)

C. Sirup and molasses.—*1. Table sirup.*—Dr. WILEY says that the manufacture of table sirup engages quite a large capital in this country. The old-fashioned table sirups were made directly from the maple tree, sugar cane, or sorghum, without admixture. Then gradually the custom arose of using the molasses resulting from the manufacture of sugar. The old-fashioned open-kettle method is still used for very fine table sirup, the sugar cane juice being boiled in an open kettle, and the sirup when crystallized being put into hogsheads with perforated bottoms through which the molasses runs out. Small farmers formerly made an immense quantity of sirup from sorghum by boiling down the juice. Other large quantities were made from the maple orchard. Artificial processes have now come into vogue. Many sirups are made from glucose, artificially colored with sugar-house molasses, 5 gallons of this refuse of sugar refineries and 45 gallons of glucose making a barrel of table sirup with a slight amber color and the flavor of sugar sirup. This very common article is still sold the country over, often under fancy names, as

"Golden Drip," "Honey Drip," "Honey Sirup," and others. The witness never heard of its being sold under the name of glucose or mixed glucose. People imagine that it is a high grade of sugar-cane sirup, when in fact it is a very low grade of molasses which could not be made into anything else. It is sold at fancy prices, clear sirup with a light amber tint always brings a higher price than others, whatever its composition. Dr. Wiley makes no criticism of fabricated table sirups in regard to their nutritive value and wholesomeness. (28-30.)

Mr. BERRY testifies that the Chicago Sirup Refining Company, with which he is connected, does business with the jobbing trades. The jobbers handle a number of varieties, some light and some dark, and have their own brands. In selling to a new customer his company would require a sample of the goods wanted and would brand them as desired. Every jobbing house has from 3 to 5 or more brands of sirups. The light, medium, and dark are branded differently, although their cost and ingredients are practically the same, the darker ones, however, having more cane sugar than the lighter ones. (96.)

Mr. MAURICE H. SCULLY, of the D. B. Scully Sirup Company, says that many sirups of the same quality and price, but perhaps different colors, go under different brands. There are 30 or 40 different grades, and a good many more than that number of brands. The D. B. Scully Sirup Company has certain grades which are sold for what they are worth, and does not make sirups to order. It does not use anything in manufacturing sirup besides cane sugar, corn sugar, and maple sugar, except that occasionally a very little flavoring, such as vanilla or something of that kind, is added to certain grades. This is not used to adulterate maple sugar, but is used in vanilla-flavored corn sirup. The vanilla flavor is obtained from the vanilla bean. Corn sirup is mixed by adding glucose to a percentage of cane sirup. His company does not manufacture either of these products, but simply mixes them. The only coloring used is the cane sirup itself, a larger percentage of cane sirup being added in a dark corn sirup than in a light one. (89-93.)

Mr. Scully, being shown a can of sirup manufactured in Iowa, and apparently made to comply with the law of Ohio, explains that the label "80 per cent corn sirup, 20 per cent sugar sirup" indicates 80 per cent glucose and 20 per cent cane sirup, which is manufactured in Eastern refineries. (93.)

2. *Rock candy sirup.*—Mr. SCULLY says that the D. B. Scully Sirup Company manufactures rock-candy sirup from the sugar. The sugar is boiled to a liquid and converted into candy, and the sirup comes from the candy. The candy crystallizes on strings, but a portion of it remains in solution and is not allowed to crystallize. This sirup is used principally in soda fountains, variously flavored and colored; also by rectifiers in blending liquors. (90, 95.)

3. *Souring of sirup.*—Mr. SCULLY says very little sirup sours; possibly not one package comes back in two months. In the early fall perhaps a little comes in from having stood over the summer, but is soon used up. His company uses no antiseptic to prevent fermentation, even in reboiling sirups; it formerly tried salicylic acid or something of that kind, but gave it up, not thinking it would do any good or be effective. (94.)

Mr. Scully says damaged or sour sirups, other than maple sirups, can be reboiled and brought back nearly to their original sweetness, and can be used again in a small way in other sirups without being detected. (91.)

4. *Molasses.*—Professor JENKINS states that during the last 4 or 5 years about 20 per cent of the New Orleans molasses examined at the Connecticut Agricultural Station, and some sold as Ponce molasses, has been found to contain considerable quantities of glucose sirup. Some samples have seemed to be made entirely of glucose. (451.)

D. *Glucose.*—1. *Mode of manufacture.*—Dr. WILEY says glucose consists of dextrin, a little maltose or dextrose, and a small percentage of other substances. In making table sirups and for mixing with honey it is boiled until it has a density of from 41° to 42° Beaumé. For confectionery it is boiled to a density of 45°. The by-products of glucose are very valuable, and are used mostly as cattle foods. The oil extracted from the germ of the grain by pressure is used for various purposes. It has been used to adulterate linseed oil, and when treated with sulphur it becomes a highly elastic mass which has been used as a substitute for india rubber. About the only products of the glucose factory which are not sold as substitutes for some human food are the by-products used for cattle feed. (21.)

Dr. Wiley says that in the manufacture of glucose or grape sugar in this country the starch is usually obtained from Indian corn. In Europe it is obtained from the potato. (20.)

2. *Price.*—Dr. WILEY states that within the 2 years preceding his testimony (January 17, 1900) glucose has been sold as low as nine-tenths of a cent a pound.

It was somewhat higher at the time of his testimony, but he estimated the cost of it at about one-fifth of the cost of pure cane sirup. (585.)

3. Distinguished from grape sugar.—Mr. BROWN says that grape sugar is a solid substance and glucose is a liquid. (386.)

4. Wholesomeness.—*a. Affirmed.*—Dr. WILEY has found that glucose and grape sugar, when properly made, are valuable food materials and not injurious, but they ought to be used in their proper places and quantities, as the consumption of too much of any one kind of food may be injurious. (21.)

Professor PRESCOTT's opinion is that glucose is a food and deserving of recommendation and toleration as such. The public has had very little opportunity to judge how far it is a wholesome food, because the consumer does not know when he is getting glucose and when he is getting some other sugar. (197.)

Professor MALLET states that glucose is harmless in itself, and that, in fact, ordinary cane sugar, when taken into the stomach is converted by the digestive fluid into two kinds of glucose; but a man who sells glucose under the names of other substances commits a fraud. (556.)

Mr. SCULLY does not regard glucose as having any deleterious effect. It makes the flavor of maple sirup less strong. (94.)

b. Denied or questioned.—Dr. PIFFARD believes glucose to be harmful. (192.)

Professor HALLBERG says that he would no more think of buying a sugar preparation made of glucose than of buying black jack for coffee. Some chemists say that glucose is healthy, others that it is not. (82.)

E. Legal regulation of sirup and glucose.—Mr. BERRY thinks that a national pure-food law compelling manufacturers of sirups to state the composition on the package would be of benefit to both consumers and manufacturers. In Michigan, when the law first went into effect, the pure food commissioner ruled that corn sirup could be branded as before; but in a little while he ruled that it must be branded "No. 6" sirup, and later, that it must be branded "Glucose Mixture," with the manufacturer's name. It has been so in every State that has adopted a pure-food law; so that manufacturers are compelled to keep a variety of labels on hand and change them from time to time. If there were a national law they would simply put the formula on and the sirup could go to every State in the Union. This opinion applies also to jellies. (98, 101.)

Dr. WILEY suggests that only a law requiring publicity would prevent fraud in the sale of sirup, as in the case of mixed flour. (30.)

Professor MITCHELL would permit glucose to be mixed with cane sugar or cane sirup and sold with the formula. (119.)

Professor CHITTENDEN regards the glucose industry as entirely legitimate, but thinks that the law should compel the selling of glucose under its proper name. It should bear a label to show what it really is. (423.)

F. Confectionery.—*1. Nutritive value.*—Dr. WILEY says that there is a natural taste, especially in young children, for sweet materials, and that those of vegetable origin aid in the growth of the body, furnishing heat and adipose tissue. Sweets are nutritious, even in small quantities. Late experiments made in the German army show that sugar is useful as a ration; little pellets of sugar which can be carried in the pocket serve to keep up strength when soldiers are to live 2 or 3 days on small rations during a hard march. (31.)

2. Ingredients.—Dr. WILEY says the sugar used in confectionery is nearly always reasonably pure and wholesome, but that sugar alone would make only a brittle confectionery, and the manufacturers strive to meet the demand for soft and waxy products. Marshmallows, for example, contain glucose, gelatin, and often flour, to give them the consistency and color desired; also flavoring to give them the peculiar flavor and odor. Caramels require burnt sugar; some contain chocolate, and some also glucose, and sometimes flour or starch (starch being preferred to flour because free from protein); also flavoring matter. These flavoring materials are of vegetable and synthetic origin. Some of the etherial oils, as those of cinnamon and cloves, are used in small quantities, and in minute quantities are not injurious. The synthetic flavoring bodies made by the chemist resemble or are almost identical with those obtained from fruits and flowers, and in some cases can be made much more cheaply, so that they are supplanting the natural ones. It seems to the witness that where artificial flavorings are employed the consumer should know it, because very delicate stomachs are injured by the artificial product, although the chemicals seem to be identical with the natural ones. (30, 31.)

Mr. BERRY, a confectioner, states that the body of all candies is sugar, and the next most important ingredient is glucose. After sugar and glucose the chief constituent is molasses, and then probably peanuts. Mr. Berry uses tartaric acid and citric acid, and vegetable coloring matters, which are sold with written

guaranties that they are perfectly uninjurious. The jellies and jams which he uses he generally makes from the fresh fruit and puts them up in jars. (308, 309.)

Mr. GUNTHER says that sugar makes up the body of candy, just as flour makes up the body of cake, but it is not the expensive ingredient. A perfectly pure, wholesome candy can be sold for 15 cents a pound, but the higher grades of candy are made of pulps of fruits and nuts, which are very expensive. (307.)

Mr. Gunther declares that the use of glucose is a benefit to the candy trade and a benefit to the public, in making it possible to produce uncrystallized candies without the use of cream of tartar. It is perfectly wholesome. (306.)

Mr. Gunther says that starch is not used in candies proper. It is used in some so-called fig pastes, Greek or Oriental or Turkish paste, and gum drops, which are simply an imitation of the genuine gum drop. These goods are just as wholesome as bread. Mr. Gunther has not known of the use of a substance called flourine, a by-product of glucose factories, in candy. Starch is so cheap that he does not see how anything cheaper could be found. (305.)

Mr. Gunther says that chocolate is adulterated with flour, but not with anything injurious to the health. (306.)

Mr. Gunther says that very little acid is used, except in acidulated goods, such as lemon drops. For that purpose citric or tartaric acid is generally used. Citric acid comes from citrus fruits, such as the lemon, and tartaric acid from the precipitate of the wine of the grape in casks. Confectioners buy the purest acids, because they want to use the smallest possible quantity in order to keep the candy clear. The use of cream of tartar in candy has been largely done away with by the introduction of glucose. Cream of tartar was used to make an uncrystallized candy, and glucose is itself uncrystallizable. Glucose is freer from acid, and candy made with it is better than the cream of tartar goods. (306.)

Mr. GALLAGHER says that corn flour is an excellent article of food and is used by confectioners, the demand for some grades being greater than the manufacturers can supply. (6, 7.)

3. Use of injurious materials.—Dr. WILEY says that the starch, glucose, sugar, flour, chocolate, burnt sugar, and gelatin used in confectionery are not to be condemned, but that the use of terra alba or other minerals in small quantities, even if not poisonous, is to be condemned, these materials being much more injurious than the vegetable substances mentioned, especially to children. (81.)

Dr. Wiley explains that terra alba, meaning "white earth," is a generic term for all kinds of white, finely ground minerals. It has been used largely in confectionery, and perhaps still is, in some cases, instead of starch, and to increase weight. Sulphate of lime or gypsum, when ground, makes a perfectly white powder partially soluble in water and dilute acid, and is used as an adulterant in confectionery. (81, 82.)

Dr. Wiley says that one habit indulged in by some confectioners which should be prohibited by law is the mixing of alcoholic materials with confectionery. He has examined gum drops and other candy in which a drop of brandy or alcohol could be found. He considers this extremely reprehensible, especially in candy for children's use. (81.)

Professor MITCHELL says that antiseptics are used to a considerable extent in candy, and that some substances are used in candy which are deleterious. (111.)

Professor VAUGHAN says poisonous substances are sometimes found in considerable amounts in confectionery. The anilines are often contaminated with arsenic. (208.) See also *Coloring materials*, pp. 91, 92.

Dr. BILLINGS says terra alba in confectionery is bad, not as a necessarily toxic thing, but as a foreign substance. Not very much is known about the effects of earth upon the human economy, but a class of people in the Carolinas who are earth eaters or clay eaters are stunted and mentally and physically degenerate. (249.)

4. The Confectioners' Association and pure candy.—Mr. BERRY has not known terra alba to be used during the last 8 or 10 years. The Confectioners' Association maintains a fund for the prosecution of people who use it, because it is considered injurious. (308.)

Mr. SHIELDS, a confectioner, says that he does not know of anyone who now uses terra alba in candy. It was formerly used principally in stick candy and drops which were sent to the Western and Southern trade. Very little was used in the Northern trade. The Confectioners' Association has done away with it. Mr. Shields uses both domestic and imported coloring matters. He understands that the imported colors are inspected by the governments in Europe, and must be strictly pure. (309, 310.)

Mr. GUNTHER, a confectioner, states that the Confectioners' Association of the United States was formed some 10 or 15 years ago, "with the sole object in view of shutting out and putting down every man who uses anything that is deleteri-

ous" in confectionery. The association includes almost every reputable confectioner in the country. It undertakes to look closely after the practices of those who refuse to join it. Mr. Gunther believes that the association has stopped the use of injurious materials, mineral colors, aniline colors, terra alba, and ethereal flavors. (304, 305.)

Mr. Gunther states that whenever the Confectioners' Association hears a report that anyone has been made sick by eating candy it investigates the case, and as a rule finds that the story is without foundation. If a child is taken sick within 48 hours after eating candy, physicians often conclude that the candy caused the trouble. In reality, Mr. Gunther asserts, candy which contains injurious materials would act in 15 minutes or half an hour. But for 10 or 15 years, since the formation of the Confectioners' Association of the United States, Mr. Gunther believes that the use of injurious materials, mineral colors, aniline colors, terra alba, and ethereal flavors, has been entirely stopped. (304, 305.)

Mr. Gunther says that he does not remember hearing of the use of terra alba during the last 10 or 15 years. (307.)

Mr. FAULKNER, a confectioner, says his firm makes the common kinds of candy of sugar, glucose, cream of tartar, and coloring matter. The coloring matter is a purely vegetable product imported from Germany and passed on by the German Imperial Government. He uses citric acid and tartaric acid. He does not use flour or starch or corn flour or flourine. He does not use terra alba, and has never seen it used, though he has heard of its being used in St. Louis. (302, 303.)

5. *National regulation demanded.*—Mr. GUNTHER would regard national legislation upon the subject of pure candy as very desirable. (306.)

Mr. SHIELDS believes that the Government ought to levy a license tax on candy manufacturers, in order to suppress the numerous small and ill-conducted concerns. He declares that 83 per cent of the candy is made in basements and cellars, by people who know nothing about the business, and it is from these small establishments that all danger to the public health in the manufacture of candy arises. (309-311.)

G. Honey.—1. *Extent of adulterations.*—Dr. WILEY says that honey is perhaps as extensively adulterated as any other food product in the United States, glucose being very convenient and cheap as an adulterant. In examining a great number of liquid honeys, purchased in the open market, he found that more than half were adulterated, in some cases the quantity of real honey being slight. He has often seen pieces of honeycomb floating in a large excess of glucose. This form of adulteration has probably proved as profitable as any other form of food sophistication. He says that glucose is wholesome and readily digested, and does not consider it injurious when used carefully, the fraud in this case being a financial one. The adulteration of honey has almost driven to bankruptcy farmers who sell genuine honey, especially in parts of California where the farmers' chief income was from that source, and has injured every farmer who keeps a hive of bees, by diminishing the value of his product. The United States has no control over the honey product, there being no national law on the subject. (14, 15.)

Dr. Wiley has analyzed many hundreds of samples of honey and found an enormous percentage of strained honey adulterated. When he made his examination several years ago it was the exception to find a pure honey in the strained form in the open market. He never found such honey with a piece of comb in the jar that was genuine. He says the presence of a piece of comb in the jar is a positive proof of adulteration, because comb honey is not sold in that way. The combs found in these jars are never perfect; they have the appearance of having been broken down mechanically, as in the process of centrifugal extraction, or of having been made artificially. The cells are sometimes half an inch deep, sometimes shorter, and they are frequently broken up. (213, 214.)

Dr. Wiley says that of 11 samples of honey bought by him in New York 8 were pure, 2 of doubtful purity, and the other 3 were adulterated with cane sugar or commercial glucose, or both. Dr. Wiley thinks it safe to say that 50 per cent of the strained honeys on the market of the United States are adulterated. (586.)

Dr. Wiley says that the nectar of flowers is originally common sugar, but is converted into invert sugar by the bee, so that natural honey contains at the utmost only 2 or 3 per cent of cane sugar. Honey made by feeding bees sugar sirup shows a large percentage of cane sugar, because the bees are not able to invert the whole of it, and this is easily detected. Natural honey, when examined by the polariscope, always shows a left-handed rotation, while cane sugar and glucose both rotate the plane of polarization to the right. Honey gathered from the pine tree is a right-handed honey, and sometimes it has been claimed in cases of prosecution for adulteration that the right-handed polarization was due to the gathering of the honey from pine trees; but this honey has a very rank taste, by which it can be distinguished, and is not fit to use. (215.)

MR. GEORGE W. YORK, of Chicago, editor of the American Bee Journal, knows of no way in which honey in the comb can be tampered with or adulterated, and says all the comb honey on the market is absolutely pure. He says that liquid honey is the kind which is adulterated. He is positive that this adulteration is largely practiced, mainly with glucose, which can be bought for about 1 cent a pound, while pure liquid honey is worth from 7 to 8 cents a pound. He considers this adulteration not particularly harmful, but rather in the nature of fraud. It is accomplished by the dealers, who buy the honey directly from the producers and adulterate it. One of the adulterators in Chicago says he puts in one-eighth honey and the rest glucose. The taste is very distinct. Nearly all the large wholesale grocers adulterate honey. (209, 210.)

Mr. York thinks it has never been a practice among bee keepers themselves to adulterate their honey, and that he never knew of more than one bee keeper who was accused of adulterating honey. He thinks it is seldom adulterated by retailers, because they seldom put up honey in glasses, but is nearly always done by the wholesale grocers. (215, 216.)

Mr. York says that Chicago dealers who handle honey in large quantities very often get comb honey that is unsealed or partially sealed, and nearly always sell it to the adulterators to be cut up and put into jars. They are almost full depth cells. Bee keepers themselves never put up honey in jars with pieces of comb. (213, 214.)

Mr. York defines pure honey as the nectar of flowers gathered by bees and stored in combs made by them. If honey were produced by feeding sugar or syrup to the bees, he would not regard it as true honey; that would be getting the bees to adulterate. Some have fed sugar to produce honey, but this is practiced very little. It is not profitable, on account of the expense of the sugar and the waste in transforming. Sugar is fed for the purpose of wintering bees in very poor seasons, but not to any extent for the purpose of producing honey. (213.)

Mr. York says bee keepers do not use glucose as a food for bees, because the bees will not eat it. It was attempted some years ago in Mississippi, but in a short time the bees were all dead. (210.)

Mr. York and Dr. WILEY both think that glucose is practically the only adulterant used with honey in this country. Dr. Wiley says that in Europe, where the laws are more stringent, invert sugar has been very largely used for adulterating honey, making the problem of the chemist very much more difficult, as invert sugar is ordinary sugar treated with an acid which converts it into a mixture of dextrose and lebulose, almost the exact composition of natural honey. (214, 215.)

Mrs. N. L. STOWE, of Evanston, Ill., and Mr. HERMAN F. MOORE, of Park Ridge, Ill., both bee keepers, fully indorse Mr. York's statements with reference to the adulteration of honey. Mrs. Stowe says the sale of adulterated honey as honey does great harm to the bee keepers. She has no knowledge of bee keepers adulterating honey, but thinks it is done principally by the jobbers. Some bee keepers have to feed their bees in winter when they take too much of the surplus from them in the summer and fall, but she has never done so. She uses a comb foundation, but does not consider that an adulteration if it is made of pure beeswax. (216, 217.)

Mr. Moore says one of the first things he noticed when he first began to sell honey, years ago, was that a piece of comb in liquid honey was a badge of fraud. (217.)

Professor EATON has found cane sugar used as an adulterant in honey in two ways: (1) Added to the strained or extracted honey, and (2) fed to the bees. It is not an injurious adulterant. He has suspected adulteration with invert sugar, but has not been able to substantiate it. The abnormal percentage of cane sugar is very marked in fresh honey, but after the honey is old the sugar seems to be largely inverted, so that it is very difficult, often impossible, to detect it. (235, 236.)

Mr. FURBAY would consider a compound of honey and glucose sold for honey a fraudulent product, though not necessarily injurious to health. (61.)

2. Comb foundations and artificial comb.—Mr. YORK says comb foundations, made of absolutely pure beeswax run through rollers, are put in the center of empty boxes and placed in the hives. The bees draw out the comb, lengthen the cells, and add more wax. Experiments have been made with paraffin and other wax, but it will not do, because the heat of the hive melts it, and the bees do not take to it as well as to the natural wax. Mr. York believes artificial comb cut up and put into bottles with glucose might deceive purchasers, but the cells can not be made nearly the depth of the natural comb. Cells nearly half an inch deep have been made, but they were not a success, and have been abandoned. (212.)

Mr. MOORE says it is mechanically impossible for a man to make beeswax that will suit the consumer; he can not make it clean enough or light enough, and it

is commercially impossible, because the bees work more cheaply than men can, even with the very finest machinery or the cheapest labor. Under very favorable circumstances, where real honey can be raised from 10 to 12 months a year, as in Cuba, comb honey can be raised for 2 or 3 cents a pound. A comb foundation is simply an aid to the bees. Our honey crop is short in duration, and if the bees spend part of the time in building the comb they lose part of the crop. Beehives are composed of two structures—the board department, perhaps a foot high, and an upper frame half that height. Nine pounds of comb foundation are used in the permanent board part to 1 pound that is used in the surplus or pound sections. The comb foundation used in the board department may be used for 15 or 20 years, and is never destroyed; it is filled with young bees and honey year after year. Mr. Moore believes that the percentage of bee keepers who use the comb foundation in the 1-pound sections is very small, and he advises against its use there. (218.)

3. *Liquid honey—demand and process of extraction.*—Mr. MOORE says that nine-tenths of the trade ask for liquid honey; nine tenths of the cake bakers, candy makers, roach-poison makers, druggists, and private families require liquid honey without a comb, if they understand that it is always pure honey. The honey is extracted from the comb by centrifugal motion, from one side at a time. The wood protects the wax, and the bees at once fill the comb again. A good comb with a good foundation in the center can be used 25 or 30 times. It takes more experience to raise comb honey than liquid honey. (219, 220.)

4. *White-clover and wild-sage honey.*—Mr. YORK, referring to a jar labeled "California white-clover honey," says it was put up by a Chicago firm. He never heard of a pound of white-clover honey being shipped from California. (214.)

Mr. York says honey made from wild sage or sage brush has a very different flavor from white-clover honey. (218.)

5. *Varying physiological effects.*—Dr. WILEY says pure honey sometimes produces nausea, and that some forms of honey are absolutely poisonous to some people. (216.)

Mr. YORK says a friend of his once said honey always made him sick, but witness gave him some pure honey, and he took it without harm. (216.)

6. *Preservatives unnecessary—granulation.*—Mr. YORK says he thinks no anti-septic preservatives are used either in pure honey or in its substitutes. Pure honey needs no preservative, as it will keep almost indefinitely. Honey has been found in one of the Egyptian catacombs, done up with a mummy; it was 2,000 years old, but as good as ever. Nearly all pure honey will granulate in time, some in 1 month, some perhaps not for 2 years. Mr. York does not know of anything being used to prevent granulation. (211.)

7. *Proposed legislation.*—Mr. YORK says very few States have pure-food laws affecting honey. All the bee keepers ask for is a law requiring the articles offered for sale to be labeled. There would be at least five times as much pure honey consumed in Chicago if people were not afraid of the adulterated article. (210.)

Mr. York thinks a national law regulating the commerce between the States in adulterated honeys would be beneficial to bee keepers. (215.)

Mr. HERMAN F. MOORE, secretary and treasurer of the Chicago Bee Keepers' Association, says a law preventing fraud in honey will benefit everybody, both consumers and bee keepers; he thinks it would increase the demand for pure honey. The sale of adulterated honey would be reduced 75 or 80 per cent if it were labeled. (220.)

Professor EATON believes that in the case of honey an honest label stating the composition is all that is required. (226.)

8. *Jelly.—1. Substitution of gelatin, glucose, etc.*—Dr. WILEY says that the old-fashioned pure jelly has almost gone out of use in the trade, the gelatin of commerce being largely employed, with artificial flavorings. All animal tissues contain the elements of gelatin, but they exist especially in cartilage, bones, and hoofs in the form of collagen, a highly nutritious, nitrogenous substance, which is converted into gelatin when heated in boiling water. The highest grade of gelatin is obtained by heating the tendons and bones of animals, especially the tendons. The hoofs and rougher portions yield gelatin which is used as glue. Gelatin is entirely different in chemical composition from the pectin or pectose of fruits, which is of the same family as sugar, and which produces jelly. The gelatin of animals has a higher nutritive value, pound for pound. The gelatin in artificial jellies simply gives the flexibility and tenacity of the mass, while the color and flavor are made to imitate those of fruits. A great deal of the jelly on sale contains no fruit substance, except perhaps a dash of wine. The witness has nothing to say against their wholesomeness, but characterizes them as fraudulent. Jellies are also largely made, he says, by utilizing the by-products of the apple-drying

and cider-making industry, the parings, cores, and pomace, from which is obtained pectose, which is fortified with glucose and flavored and colored. (22, 23.)

Six samples bought by Dr. Wiley in New York City were without exception artificial, though they were labeled and sold as pure fruit jellies. They were made of glucose, flavored with an extract of apple cores and peelings obtained from dried-apple factories, colored with aniline dyes, and further flavored with artificial essences. Dr. Wiley says that one can not be at all certain, even in a high-grade store, of getting a pure fruit jelly when one asks for it. In a lower-grade place one is quite certain to get some composite article. Yet one pays the price of the best article. (584.)

Professor JENKINS states that more than one-half of the jellies examined at the Connecticut Agricultural Station are adulterated. One firm sells several brands of jellies, "orange," "strawberry," "grape," etc., all made of a starchy paste, sweetened with glucose, flavored with artificial flavors, colored with coal-tar dyes, and kept from molding with salicylic acid. (451.)

Mr. STEWART does not believe that 5 per cent of the jellies sold are pure, from what he sees going out in tubs and in retail stores and elsewhere. Glucose and acid of some kind are used. (79.)

Mr. DUFF says that it is very difficult to get a pure fruit jelly. Glucose is largely the base of those in the market. (498.)

Professor PRESCOTT says jellies are largely made up of artificial mixtures and given the name of the jelly of this or that fruit. He thinks this is a very flagrant instance of injurious substitution. (198.)

Mr. BERRY thinks all the syrup houses now manufacture jellies. The Chicago Sirup Refining Company makes two varieties, one pure, the other the so-called "commercial jelly," which is marked "Jelly." The pure jelly is made from fruit juices and sugar as people would make it at home for their own consumption. In making apple jelly absolutely as pure as it can be made the apples would be boiled and the liquor condensed to the proper consistency and equal parts of sugar added; but Mr. Berry considers it better to make it of apple cider, because the jelly is then more transparent and has a more delicate flavor. The demand for pure jelly is very limited. The jelly sold is consumed by the masses, who want jelly at a certain price and do not care whether it is jelly or not. The commercial jelly in Illinois and other States having no pure-food laws is labeled simply "Currant jelly," "Raspberry jelly," etc., the commercial jelly being the base of a great variety of jellies. This commercial jelly is made from cores and skins. In evaporating apples the parings and cores are evaporated and will then last from one year to the next. They are mixed with glucose and a small proportion of sugar. The jelly is 50 per cent glucose, 10 per cent sugar, and 40 per cent apple juice, the glucose being put in to give it body. Mr. Berry considers this jelly wholesome. His company uses no gelatin.

Mr. Berry says the tart taste of the jelly is imparted by the apple juice, which is not overcome by the 10 per cent of sugar or by the glucose. In making currant jelly, also, apple juice and glucose are the foundation, and the jelly is flavored and colored bright red. People go largely by the label on the pail. (98, 99.)

2. Acids and coloring matters.—Mr. BERRY says the Chicago Sirup Refining Company, in making commercial jelly, uses an acid preparation to make the jelly firm, bought from the concern which prepares it. He does not know its composition, but declares it perfectly harmless; the pure-food commissioners in Michigan, Ohio, and other States have accepted it. Only a very small trifle is required in each pail. It has no antiseptic feature. Witness does not think an antiseptic necessary, having seen jelly a year old. He thinks that when old-fashioned domestic jellies ferment the trouble lies in the making. Home-made jelly is usually allowed to stand over night before it is considered well jellied, but jelly made with this preparation will be jellied in a few hours as well as it ever will. The company uses an imported coloring matter guaranteed to be a perfectly harmless vegetable color. An ounce of coloring matter dissolved in water is used in 50 gallons of jelly. Formerly aniline was used, which is poisonous. Witness does not know the composition of the coloring matter used, but the food commissioner of Ohio has passed upon it as satisfactory. In Michigan the jelly is sold uncolored, and branded "Imitation fruit jelly." Several years ago the Chicago concerns in the jelly business sent a man to Michigan, with the result that the acid was acceptable, but the jelly must be uncolored. The Michigan people made a ruling and then changed it in a little while, the last ruling being that jelly must be uncolored. The Chicago Sirup Refining Company had a quantity of colored jelly in Michigan sold before this ruling was made, and it was required to exchange it for uncolored jelly. The company wrote to the food commissioner explaining that the goods had been sold before his new ruling and that the exchange would involve considerable expense, but his answer was, "I send

you a copy of the law; act accordingly." Mr. Berry has reason to believe that aniline preparations are not now largely used for coloring jellies, though some concerns may use them. The vegetable coloring matter his company uses is not as cheap as aniline, but he does not think the difference in cost would be sufficient temptation to use aniline to a man who had any regard for the public welfare. (99-102.)

Professor HALLBERG, referring to Mr. Berry's admission that he does not know the composition of two substances used in jelly, says this probably means that either the processes of manufacture are patented or that the names are copyrighted, and that the manufacturers can change or modify the formula so that the person using them may have the very best intentions and yet be using sulphuric acid. Witness has been credibly informed that it is sulphuric acid that is used. The extent to which substances may be used to give the artificial effect to simulate the natural qualities as to taste, color, or odor is a very intricate and difficult question, which can be solved only by the most careful and elaborately planned research of scientific men. (103.)

Professor VAUGHAN says most of the jellies, including pear, quince, and pineapple jellies, are made from apples by the addition of flavoring ethers and aniline colors, and by the action of some dilute acid; generally hydrochloric acid in the preparations he has examined, but sometimes sulphuric acid is used. The acid breaks down the fruit and makes a jelly of it more readily than by the ordinary method. He thinks hydrochloric acid is not present in sufficient quantities, at least in the jellies he has examined, to do any harm; it is a normal constituent of the stomach. He objects very much to the use of sulphuric acid. (204.)

Professor MITCHELL mentions a case in Milwaukee where an acid undoubtedly deleterious to health was used in the manufacture of jelly from apple cores and parings. A Milwaukee manufacturer used small amounts of sulphuric acid which remained in his finished jelly, but he was willing to change his methods. (132, 133.)

Dr. WILEY, being asked whether muriatic or hydrochloric acid is a proper thing to use in jelly, says he should not consider a small quantity injurious, because the acid produced in the stomach during digestion is always muriatic acid. (23.)

Professor CHITTENDEN thinks it very doubtful whether the proportion of acetic acid which would be added to a glucose mixture to make it taste like jelly would be injurious to the human body. The quantity which a person would ordinarily consume in that way would probably be too small. But such products ought to be labeled for what they are, and not sold for something else. (424, 425.)

3. Proposed legislation.—Dr. WILEY believes there should be some law to prevent the marking of artificial fruit jellies as pure fruit jellies, because it is a fraud upon the consumer and unfair competition with honest manufacturers and fruit growers. (23.)

Professor VAUGHAN is in favor of permitting the use of dilute hydrochloric acid in jelly, with proper notice on the label. The flavoring and coloring of jelly should also be controlled by law. (204.)

VI. CONDIMENTS.

A. Generally.—Dr. WILEY says that nearly all condiments and spices, including coffee and tea, are adulterated by being mixed with some inert and harmless substance; it is very difficult to purchase condiments with a certainty that they are pure. He does not consider the mixing of them with other matters to be objectionable; many persons prefer to have their condiments reduced in strength in that way. The fraud is in selling the mixed article for the pure. "Fillers," consisting of ground inert matter colored to represent every form of spice and condiment, are manufactured in large quantities and sold to dealers in spices and condiments. Sometimes ground shells, such as peanut and cocoanut shells, are used; also flour colored with various materials, especially turmeric. The witness produced samples of fillers for the following articles: (1) Allspice and cloves, (2) black pepper, (3) cayenne pepper, (4) cinnamon, (5) ginger, (6) mustard, (7) cream of tartar; the first six consisting of ground shells of nuts or colored flour, and that for cream of tartar consisting of infusorial earth. (17-19.)

Mr. DELAFONTAINE says that when he investigated spices some years ago he found that almost all of them were largely adulterated with diluters, not necessarily injurious to health. (229.)

Mr. STEWART says that several years ago his company discontinued the handling of any except strictly pure spices, and turned them out under its own brand with a guaranty on every package; selling only to the trade and not to jobbers. He thinks that, as a rule, wholesale grocers who have their own roasting and grind-

ing plants, and who make a business of handling spices, sell a pretty good class of goods: but he believes that people who handle carts, hayrakes, and buggies, and give them away with a hundred pounds of spices, must handle a pretty poor grade of goods; they must make money somehow. The prices of certain goods which have been put on the free list are very low, and he thinks it has been found difficult at times to find adulterants. This has had a tendency to reduce adulteration. (78.)

Mr. MURRAY, a drug and spice miller of Chicago, says spices are adulterated in grinding. His business has 2 branches: (1) The manufacture of goods which are kept in stock, and (2) the manufacture of goods to order. This applies not so much to the drugs as to the spices. The goods manufactured and kept in stock are absolutely pure, and when a man wants to buy pure food he generally takes what is in stock. If he wants an adulterated article he gives the order, and it is made for him. Orders for adulterated goods do not amount to more than 5 per cent of the business. Some of the mixtures are made of cocoanut shells, and some from buckwheat middlings or bran. He has ground them for the trade, some men making a business of selling mixtures. Sometimes pepper shells are used in pepper, and mixtures of cinnamon and cocoanut shells for cinnamon. Sometimes there are mixtures made of corn or wheat flour, colored, baked, and ground up. Witness buys his mixtures sometimes in Philadelphia, and sometimes in Chicago. All spices are ground pure. If a man wants cassia and orders it, he gets it strictly pure. If he orders it in such a way that it means so many cocoanut shells, it is made for him, and he knows it. Witness does not put his name on it, but simply says it is a barrel of so and so, not stating whether it is pure or not. Pure goods are marked "strictly pure," or "pure." These mixed goods are not bought so much by jobbers in the city as by outsiders—"scheme men"—men who give away a cow or a mule, or a horse and wagon when you buy 10 pounds of nutmeg. Witness does not sell to the retailers, but only in barrels and boxes to the wholesale trade, which does not, as a general thing, order the goods adulterated. The most of his sales of spices are made to the drug trade, who are small dealers in spices. He thinks there is just cause for complaint as to the purity of ground spices, etc. (66-72.)

Professor HALLBERG says cocoanut shells are about as soluble in the stomach as the integuments of the spices themselves. (84.)

B. Pepper, cayenne pepper, etc.—Dr. WILEY has never seen unground pepper adulterated, but says it is very common to adulterate it in the process of grinding or after it is ground. (18.)

Mr. MURRAY says that he has had to adulterate pepper when it has been ordered that way for the trade at certain prices. If a merchant ordered a barrel of pepper at a price less than its cost he would have to put in a certain amount of shells or whatever the man might select. (66, 67.)

Mr. GEORGE W. SMITH, a flour dealer, says buckwheat bran is used by spice mills to grind and mix with their black pepper, buckwheat bran being black. For white pepper white bran is used. (134.)

Mr. DUFF, chemist of the New York Produce Exchange, says that pepper can seldom be got pure. He has found cracker meal in it, and ground corn and other refuse. (497.)

Professor JENKINS, of the Connecticut agricultural station, exhibited a sample of pepper made of acids and charcoal. This is furnished to the trade for mixing with genuine pepper. Professor Jenkins also exhibited a sample of cayenne pepper made of acids and colored with an aniline dye. (452.)

Professor HALLBERG explains that capsicum is the fruit of the cayenne pepper plant, which comes from Cayenne, in South America. He thinks there is not a pound of pure powdered capsicum in Chicago. It consists chiefly of red brick dust. Pure powdered red pepper is so hot and pungent that no one could possibly use it, and it is found necessary to reduce it. There is no especial harm done. Red brick dust is in many complaints one of the very best things that can be taken into the stomach. (84.)

Mr. CLIFF, a manufacturer of pickles, says he buys red peppers from farmers and grinds them up himself. He does not buy ground capsicum of the spice mills, the cheaper class of which adulterate it with ground meal, etc. (156.)

C. Mustard.—Dr. WILEY says that ground mustard is very often mixed with so much flour and turmeric that the quantity of pure mustard is very slight, half a teaspoonful sometimes having only the least flavor of mustard. (17.)

Mr. MURRAY believes that the mustard is generally adulterated with flour and turmeric. Some mustards are colored without being adulterated. It is a hand-somer article when colored. (69.) See also *Extent of adulteration*, Jenkins, p. 24.

Mr. DUFF, chemist of the New York Produce Exchange, declares that he has

found mustard to be largely exhausted. Few, if any, of the samples which he has examined contained the amount of oil of mustard which they should have. The great adulterants are starch and flour colored with turmeric. (497.)

Professor JENKINS, of the Connecticut agricultural station, exhibited a sample of mustard containing 20 per cent of plaster of paris. (452.)

Mr. CLIFF, a manufacturer of pickles, says he gets his mustard from a New York manufacturer, who has been furnishing it also to Cross & Blackwell and to a good many people in this country, who find it very satisfactory. (157.)

D. Ginger.—Professor MITCHELL mentions 1 case in which ginger was adulterated with old tarred rope to give it the necessary stringiness, but says this is not customary. (119.)

E. Cloves.—Mr. MURRAY says clove stems are used in cloves. They have a slight flavor of cloves and make a very good article. He does not think he has ever used anything else in cloves. Strictly pure cloves can be obtained. (69.)

Professor HALLBERG says the stems of cloves and the expanded flower in which cloves grow contain scarcely any of the oil of cloves, which is the valuable principle of the spice. The flower of cloves, which is the spice itself, contains from 10 to 15 per cent of volatile oil, representing the flavor of cloves, and a little resin, giving the pungency. (80, 84.)

F. Salt.—Dr. PIFFARD says salt is sometimes mixed with a small percentage of cornstarch to make it run more freely from the cruet, the cornstarch acting as a lubricant. Sometimes it is sold as absolutely pure. As a salt manufacturer, Dr. Piffard himself offers one brand of salt which is mixed with cornstarch in a small proportion, but that fact is stated on the label. (188, 190.)

G. Olive oil.—Dr. WILEY says the sale of cotton-seed oil for olive oil has been very extensively practiced in this country. Hundreds of barrels of cotton-seed oil go to France and Italy and return to this country as olive oil or mixed with olive oil. As far as food value is concerned there can be no choice between the two oils. The preference in favor of olive oil is a matter of taste. Some persons prefer the flavor of cotton-seed oil, but it sells for about one-fifth the price of olive oil. When it is sold as olive oil the profit is enormous and the fraud correspondingly great. In California a great many persons are engaged in the production of olive oil, so that this fraud affects American producers to a very large extent as well as the consumers. He has noticed some improvement, in that dealers have left the word "olive" off their bottles and sell the product as table oil, being careful not to use the name "cotton." (16.)

Mr. ROSSATI, an expert employed by the Italian Government, declares that 6,000,000 gallons of cotton-seed oil are produced yearly in this country, and that it is practically all sold either as salad oil or as olive oil. It is never sold under its proper name. In Italy the adulteration of olive oil has of late been rendered more difficult than in other countries of Europe by a high duty on cotton-seed oil. If there is now any adulteration there it takes place in bonded warehouses. The adulterating is chiefly done in this country. The people who are guilty of it can not be punished at law because they use fictitious names, and no individual's interest is specially affected, though the general interests are affected. The mixtures of cotton-seed oil and olive oil are sold as olive oil under foreign names, but not under the name of any actual firm. The temptation to this practice is exceedingly great, because cotton oil can be bought at 30 cents a gallon, while the cheapest eatable olive oil, duty paid, costs \$1.40. (446, 447.)

Mr. ZUCCA, president of the Italian Chamber of Commerce of New York, says that olive oil is much adulterated in this country, particularly in New York, Chicago, and New Orleans. He thinks that about two-thirds of the olive oil sold in the United States is mixed. Professor Rossati, according to Mr. Zucca, has found as much as 97 per cent of lard oil and other oils in some samples. Almost all the brands of respectable houses on the other side are imitated here. The least possible difference may be made, such as one letter more or one letter less in the spelling of the name of the maker, in order to avoid criminal prosecution. Pure olive oil costs here at wholesale, including duty, \$1.55 a gallon, while the best cotton-seed oil can be bought in quantities at 39 cents. The substitution is a great detriment to the trade of importers who are doing a legitimate business. It ought to be made a punishable offense to mark cotton-seed oil with a label which says olive oil. (485, 486.)

Mr. FURBAY says it is difficult to get pure olive oil. Recent reports show that the greater part of the oil exported from France is mixed with peanut oil. When this is labeled olive oil he considers it fraudulent. (61.)

Professor JENKINS says that the Connecticut agricultural station finds about half of the brands of olive oil to be pure, of better or poorer quality, and about half to contain mixtures of cotton-seed oil and oil of sesame. (458.)

Mr. HOBBS says that he has bought olive oil in Marseilles and found the word Cincinnati on the package. It was sold for pure Italian olive oil, and the dealer thought that Cincinnati was an Italian port. (496.)

H. Vinegar.—Dr. WILEY says that in this country the term "vinegar" is usually used to imply cider vinegar. In England the term "vinegar" means malt vinegar. In Europe vinegar is made almost exclusively by the fermentation and oxidation of grains. There are 3 classes of vinegars in the market—cider, alcohol, and malt vinegar. Cider vinegar, being preferred in this country, would, if properly protected, bring a higher price than the others. In its preparation there is first a fermentation which converts the sugar into alcohol, making hard cider. The next fermentation converts the alcohol into acetic acid or vinegar. Malt vinegar is made in the first instance like beer, and is then subjected to further fermentation, which converts the alcohol into acetic acid, the acid principle being the same as in cider vinegar, but the extract with which it is associated being the extract of the grain used. The witness considers both of these products legitimate forms of vinegar. In this country there is an enormous quantity of another form, made by oxidizing the low wines of the distillery by allowing them to trickle over beech shavings, making vinegar which has scarcely anything in it but acid and water. This is artificially colored, and probably a little dextrin or other substance is put in to give it body. Malt vinegar is not at all deleterious, and low-wine vinegar is also wholesome in very small quantities, but their flavor is not as good as that of the apple. The consumer can not tell what he is getting, but low-wine vinegar, which is the cheapest, probably has more sale in this country than all other kinds put together. The witness sees no objection to the use of low-wine vinegar in pickling, but says all vinegars should be sold under their proper names. (24, 25, 234.)

Professor FREAR says that on examining the vinegars sold in the mining region of central Pennsylvania some years since, he found that nearly three-fourths of those sold as cider vinegar were low-wine vinegars artificially colored. Some samples branded as cider vinegar were made from the wastes of sugar refineries. In order to avoid the simpler methods of detection of substitutes there has recently been produced a large amount of low-wine vinegar to which the standard amount of solids has been added in the form of cheap apple jelly, made from parings, the residue left in the manufacture of dried apples. (528, 529.)

Professor EATON, of Chicago, formerly chemist to the Minnesota dairy food commission, believes that vinegar is adulterated more extensively than any other article of food. It is invariably diluted, vinegar as ordinarily made being far too strong for consumption. In England sulphuric acid has been added to a certain extent as a preservative, but not in this country. He knows of no foreign acids having been added to vinegar in this country. The principal adulteration of vinegar is the substitution of colored low wine, beer, and malt vinegars for cider vinegar. He believes that these vinegars are not injurious to health, but differ from cider vinegar only in flavor and strength. Vinegar prepared by oxidation of wines contains as much as 10 or 12 per cent of acetic acid, and must be diluted before it is consumed, because it is entirely too strong. About 4 or 5 per cent is probably as high a degree of strength as should be used. He has examined hundreds of vinegars as low as 2, 3, and 4 per cent. Wisconsin requires 4 per cent and Minnesota 4.5 per cent of acetic acid in vinegar. He thinks the interests of the country would be subserved by labeling each kind of vinegar as the product of a certain article, and he would establish a minimum standard, with a label law or brand law for any percentage of acid higher than the standard. (233, 334.)

I. Ketchup.—Professor JENKINS states that tomato ketchups are largely made from the cores and the skins of the tomatoes, cooked, strained, and dyed with coal-tar dye and preserved with salicylic acid or benzoic acid. Out of about 45 samples examined by the Connecticut agricultural station, 6 were free from antisepsics, 27 contained salicylic acid, and 8 contained benzoic acid. (452, 453.)

Dr. WILEY says ketchup would not keep 24 hours after opening without a preservative, and contains salicylic acid in 99 cases out of 100. (44.)

J. Pickles.—Mr. CLIFF, a manufacturer of pickles, says that white-wine and cider vinegars are the only kinds of vinegar he uses. Quantities of cider vinegar are used for piccalilli. He uses no coloring matter whatever. Some manufacturers use coloring matter to produce a bright-green color, but only in goods for export and goods which are expected to stand a long time on the shelf. It is not necessary for local goods. Alum is used a good deal in the manufacture of pickles, for export trade especially; not to his knowledge in pickles sold in the United States. Pickles are sometimes prepared in copper kettles, causing them to turn green. (155, 156.)

Professor PRESCOTT believes alum is used somewhat as a mordant in fixing the color of pickles. (199.)

K. Horse-radish.—Mr. CLIFF says there is considerable adulteration of horse-radish. Indian turnips are used to fill up the bottle and give the color of horse-radish. If too much of this is eaten it is very unhealthful. The United States Dispensatory says it is very good to a certain extent, but it does not belong in food. The strongest horse-radish is too bitter and not good for the stomach. It loses its strength very rapidly, even when hermetically sealed; light and sun affect it as they do pickles. (156, 157.)

VII. TEA AND COFFEE.

A. Tea.—1. Its comparative purity.—Professor JENKINS states that among several hundred samples of tea examined by the Connecticut agricultural station, none was found to give evidence of intentional adulteration. (452.)

Dr. WILEY says that the adulteration of tea is not so common as that of the other condiments. (18.)

2. Impure and exhausted tea.—Mr. DUFF, chemist of the New York Produce Exchange, says that he found one sample of tea which contained pods of seeds and some hair, though these impurities may have been accidental. But the weight of the sample was largely composed of stems, and theine was almost entirely lacking. It had the appearance of being exhausted tea; that is, tea which had been used once and then collected and dried. (498.)

3. Facing and coloring.—Mr. DUFF says that tea is "faced" by the use of ultramarine or other substances, either in powder or in solution, which put a surface on it and change its appearance. It is sometimes weighted at the same time. (499.)

Dr. WILEY says the green color of tea is often secured by the addition of a coloring material, and that tea is made heavier by mineral substances, sulphate of lime or sulphate of barium being sometimes added, so that it sticks to the leaf and gives it a better appearance and greater weight. Prussian blue, indigo, turmeric, plumbago, and soapstone are also used. The finest teas are very often adulterated and colored in this way, and this may be done to such an extent as to be injurious. (48.)

4. A tea standard proposed.—Professor HALLBERG does not see how a tea taster can possibly arrive at the real consistency of tea by the taste, and considers it better to have a chemical analysis and know what the tea should consist of, requiring it to come up to that standard. (84.)

5. Tariff.—Mr. STEWART says the duty of 10 cents a pound on imported teas has raised the price of tea and has shut out all poor, trashy stuff. The standards adopted by the American trade are higher, and to-day we are consuming the best tea of any country except Russia.

B. Coffee.—1. Valuable constituents.—Professor HALLBERG says that coffee as defined in the Pharmacopoeia is the seed of the *Caffea arabica*. The immature seeds of coffee do not contain any appreciable amount of caffeo-tannic acid, the principle which the seed must contain in order to be coffee as defined by the Pharmacopoeia. (80.)

Professor FREAK states that it is a great question whether the chief food or drink value of coffee is dependent upon the caffeine. The physiological properties of tea and coffee are different, yet the principle is the same in both cases. (483.)

2. Damaged coffee.—Mr. STEWART, a wholesale druggist and director of the W. M. Hoyt Company, brought to the committee some samples of coffee shipped from Brazil and reshipped from Hamburg to this country, consisting of overripe or dead beans which had become sour, the trade name being "black jack." It is sold as coffee, but has no value for the stomach. The drinking of it, in Mr. Stewart's opinion, creates a perverted taste. Germany receives coffee sometimes in the hull and sometimes in the bean, and then it is hand picked. Black jack can not be sold in Germany, but is imported into this country and mixed with sound coffee here. The price of black jack (May, 1899) was very high—5 cents a pound—because there was a large demand for it. A preparation is often put on to hide the defects and cover up the fraud and reduce the shrinkage, making it shine. Under natural conditions Germany would not ship any coffee to America, because the freight charges are excessive. The spoiling of coffee from mildew can be avoided. They have in Brazil machinery to treat it in such a way that it comes out very fair coffee. We use mostly Brazil coffee, 11,000,000 bags of 25 pounds each being imported. Mr. Stewart has always believed that black beans in coffee are worse than an adulteration—worse than chicory or anything that can be put in. He thinks them deleterious. Arbuckle's coffee has black jack in it, and these package coffees are what the masses are drinking. (73-78.)

Mr. JARVIE, of Arbuckle Brothers, says that Brazil produces a very fine coffee and a very poor coffee and all grades between. The grades are made by imperfections, such as black beans, sticks, stones, dirt, etc. The coffee is sorted by

hand, but not generally in this country. Mr. Jarvie is not acquainted with the term "black jack" as applied to coffee. He has seen a coffee of such low grade as to be practically all dead beans. This is the refuse. It does not come largely from Germany, but more from Central American countries than elsewhere. The quantity is very small, certainly not 1 per cent of coffee imported. Arbuckle Brothers do not handle that kind of coffee, and Mr. Jarvie does not know what is done with it. (428, 429.)

Mr. THOMPSON, of Chicago, submits an analysis of 5 standard grades of coffee as established by the New York Coffee Exchange, whose standards form the basis of all importations of Brazil coffees, or five-eighths of the total, showing that the damaged berries vary from 2½ per cent of the total weight in No. 5 to 20 per cent of the whole in No. 9, and constitute from 11 to 13 ounces per pound in triage. In No. 7, on which all transactions on the exchange are based, the damaged berries are found to the extent of 6 per cent by weight, or 8½ per cent by count. Owing to the enormous demand from packers of low-grade coffee for a low-priced article, the street or market differences between the different grades are only one-fourth of a cent, though the exchange fixes the difference at half a cent. (48.)

3. Glazing.—Mr. DUFF, chemist of the New York Produce Exchange, says that it is sometimes difficult to draw a line between what is adulteration in the treatment of coffee and what is not. When coffee is roasted, much of its water is driven off, and its weight is greatly diminished. To avoid that, coffee is glazed before roasting by the application of a suitable solution, which diminishes the evaporation in roasting, and so retains a larger part of the water of the coffee. (499.)

Professor MITCHELL has met with considerable coffee that is coated or glazed to increase the weight and cover up imperfections. The black beans are bought very cheaply. In putting on the glaze, which is some kind of dextrin, a coloring matter like hematite, a mineral iron-ore paint, is added, and is fastened to the beans by the dextrin, making them a uniform coffee brown. (121.)

Mr. STEWART says everyone in the trade glazes coffee, gum tragacanth, glucose, and gum being used. Thus the coffee is improved in appearance, but not for drinking. Mr. Stewart also says Lion coffee is made by the trust and sold in paper packages with stuff in it to make it look nice and deceive housewives into the idea that it is self-clarifying. (75, 76.)

4. Adulteration.—Dr. WILEY testifies that very extensive adulterations of even the unground coffee berry have been practiced. A little molasses and colored flour is molded to resemble the coffee berry in shape. He has found as much as 25 per cent of coffee purchased in the open market to be artificial, but no hasty buyer would notice the false berries. Even the consumer who buys coffee berries in the green is sometimes cheated, but this is not common. (17.)

Professor JENKINS, of the Connecticut Agricultural Station, says that coffee that is sold whole is not often adulterated. There was formerly a firm which made artificial coffee beans, but the agricultural station no longer finds them in the market. Crushed peas and chicory are often found in coffee. Ground coffee sold for 25 cents a pound or under has been extensively adulterated with chicory, crushed peas, and pellets made of pea hulls. Imitation coffee is made of wheat middlings or flour, with possibly a little gum, molded into a cylinder, perhaps of the size of the little finger, roasted, and crushed. The price of genuine coffee has gone down, so that there is not so much profit in adulterating it as there formerly was, and the publication of the facts with regard to adulteration is believed to have had a good effect. An expert can detect the coffee adulterations with the naked eye, but it is necessary even for an expert to confirm his impressions by microscopic examinations. In 1896 over 80 per cent of the cheap ground coffee examined was adulterated; in 1897, 70 per cent; in 1898, 40 per cent; in 1899, only 20 per cent. (451, 452.)

Dr. WILEY says that ground coffees are often adulterated with chicory. He does not consider this injurious. He rather likes chicory mixed with coffee. It gives it body and a richness of taste which pure coffee lacks. In France chicory is almost universally used in coffee. He objects, however, to paying 40 cents a pound for coffee which is half or two-thirds chicory, worth only 8 cents a pound. (18.)

Professor MITCHELL says that a few years ago, when coffee was quite high in price, farms were started north of Milwaukee for raising chicory in large amounts. Fraudulent coffee beans were manufactured all over the country and sold, roughly, at 8 cents a pound. They had a little crease in the center and looked like coffee beans when roasted. Professor Mitchell thinks coffee adulterated with chicory a permissible compound if properly labeled, because chicory will make a desirable drink, though it does not produce the same chemical or physiological effects as coffee. (119, 120.)

Professor VAUGHAN says ground coffees are largely adulterated; some of them contain no coffee at all. Father Kneipp's coffee contains none, but many people who buy it think they are getting a special brand of coffee. (205.)

Mr. STEWART says nobody uses chicory in coffee now. When coffee got to practically the same price as chicory there was no inducement. Coffee in the berry could not be adulterated with chicory, because the consumer would know it. No one sells any ground coffee except in little country stores, where they have packages of adulterated coffee. (75, 76.)

Mr. JARVIE, of Arbuckle Brothers, says that coffee is generally improved by blending. Coffee of one grade or one country is seldom sold by itself. Arbuckle Brothers use no adulterants with their coffee, and coffee is now so cheap that it would not pay anyone to do so. If any dealer now adulterates coffee, he must sell it to a very poor class of trade. (429.)

5. Legislation.—Mr. THOMPSON expresses the hope that the analysis of 5 standard grades of coffee as established by the New York Coffee Exchange, which he submitted to the committee, may assist the committee in establishing a standard to govern future importations and exclude triage or inferior coffee, for which this country has been the dumping ground of the world. He finds that a large number of importers and dealers favor the exclusion of all coffees containing, at the time of shipment, more than 2, or 3 per cent of damaged berries, hulls, sticks, and valueless foreign matter. He considers it necessary to provide for such coffees as may become damaged in transit, particularly fine East India coffees, which are still shipped in sailing vessels not of the most seaworthy kind, and often become damaged from moisture, wet coffee turning black if not immediately dried. The damaged portions of these cargoes are skimmed; that is, the damaged part is removed from the sound and usually sold as "skimmings," or damaged coffee, the sound portion after skimming being known as "made sound." There are two grades of "skimmings," G/S (good skimmings) and P/S (poor skimmings.) The G/S are often hand-picked and put with the "made sound;" the P/S are usually too badly damaged for this. The pickings from this and similar coffee form the triage coffee. Mr. Thompson believes that the skimming and hand picking of damaged coffee should be done under the supervision of a Government inspector, with authority to order the triage destroyed if not exported within a certain period, and asks if it is reasonable to expect a 3-cent duty to stop the importation of triage when a 5-cent duty did not do so some thirty years ago. (48, 49.)

Mr. STEWART says that if there were a duty on coffee, "black jack" would have to stay out. But he suggests prohibiting the importation of black jack or of any coffee with black beans in it; also prohibiting the use of glazing, which improves the appearance but does not improve the coffee for drinking. (74-77.)

Professor MITCHELL wishes to prohibit the glazing of coffee. (121.)

Professor HALLBERG says a standard could be fixed in coffee. To say that one grade of coffee may contain 10 per cent of caffetannic acid would be an excellent criterion, because black jack contains scarcely any, being simply immature seeds in which the acid has not been developed. Its use is not adulteration, but sophistication. (88.)

VIII. MALT LIQUORS.

A. Ingredients of beer (See also Beer preservatives, pp. 105-108.).—1. Malt and malt substitutes.—Mr. WYATT, a brewer's chemist, defines beer as "a nutritive infusion of maltose sirup made bitter with hops and fermented with yeast." He says that the old German method of making beer was to make an infusion of malt, boil it with hops, and ferment it with yeast. Such beers could be made salable only by keeping them a very long time in cold storage. This produced a large amount of alcohol, by the complete fermentation of the maltose present and the various other complex sugars, which ferment only during a very long storage period. It also gave the beer a marked acidity or hardness. This method of manufacture does not suit the climatic conditions of the United States nor the palates of American consumers. It is desirable to make a lighter beer—that is, one which contains less alcohol. Moreover, our American malts contain more albuminous matter than malts made from German or English barley. This albuminous matter gives nourishment not only to the yeast, but also to the various organisms which swarm in the air and the excess of it gives the beer a cloudiness and a bad taste. The cloudiness is more objectionable here than it would be in Germany, even if it existed there in the same degree, because the American always drinks his beer in a glass, while in Germany beer is always drunk out of a mug.

These conditions, which were found objectionable in America, led to scientific investigations for the purpose of overcoming them. During the process of malt-

ing a substance called diastase is produced, which has the power, under the influence of moisture, of transforming starch into maltose sugar. Malt contains much more diastase than is necessary to convert the starch which it contains. The practice was therefore adopted of adding such a proportion of starch from other sources as the diastase present was capable of changing into sugar. From 20 to 35 per cent of starch-bearing cereals is added to the malt. The choice depends mainly on the current market price. Generally rice and corn are used; sometimes a little raw barley.

Some chemists and some excellent brewers have considered that the preparation of the maltose from the raw cereal in the brewery consumes an unnecessary time, and that a syrup otherwise prepared, but to all intents and purposes the same, might advantageously be substituted. This syrup is glucose, which is prepared from starch; in practice from the starch of Indian corn.

Mr. WYATT declares that it is impossible to distinguish, either by the taste or the flavor, or by any means known to chemistry or physics, between a beer made entirely from malt and a beer made with the addition of any of the substitutes which he has discussed. The beers made by the newer processes are just as wholesome and as nutritious as those made from malt alone. (401, 402.)

Mr. SCHWARTZ, a consulting brewer, considers a proper definition of beer to be, "a fermented saccharine infusion to which some sort of bitter has been added." He does not think that other substances than malt, hops, and water are excluded by the common understanding of the word beer. Certain substances—malt adjuncts rather than malt substitutes—are even preferable to malt by itself. There is an excess of nitrogenous substances in malt. A beer which contains an excessive amount of nitrogenous matter is likely to have poor keeping qualities. American malts do not contain a very large amount of nitrogenous substances beyond what is desirable; but the addition of 20 or 25 per cent of unmalted grain is advantageous. It is impossible to obtain a fermentable liquor from rice, corn, or any unmalted cereal without subjecting it to the process called mashing, whereby the starch is changed into sugar. For this process malt is necessary. A certain amount of malt will convert the starch in a certain amount of unmalted grain. Malt must always, therefore, be the principal constituent.

The use of sugars is not to be regarded as an adulteration. Both glucose and cane-sugar syrups are used as malt adjuncts, and occasionally some honey also. The whole amount of the substitutes, including sugars in syrups and unmalted cereals, would not exceed 25 per cent of the amount of malt. (370.)

Mr. THOMANN quoted from the report of a British parliamentary commission which investigated the composition of beer 4 years before. This commission reported that sugar had been intermittently permitted in beer for a century, and that for over 50 years its use had been continuously permitted by acts of Parliament, and that 18 years before its report Parliament had deliberately granted complete freedom in the use of all wholesome materials. Under these circumstances, says the report, it must be presumed to be public knowledge that beer is not always made from malt and hops exclusively, and consequently that a person who demands beer and receives a beer which contains a portion of malt substitute is not thereby prejudiced. The report further expresses the opinion that while an all-malt brewing made from the best English and foreign barley is perhaps the best for some kinds of beer, the medium or lower qualities of barley malt are improved by the addition of a moderate proportion of good brewing sugar.

Mr. Thomann confirms the admission that the very best malt is the best brewing material for certain kinds of beer, but he says it can not be got. More than 35,000,000 barrels of beer are produced annually in the United States. Perhaps 56,000,000 bushels of barley are raised, and one-third of that barley is not good enough for malt. Beer is improved by the addition of unmalted cereals to the common grades of barley malt. Glucose is used to the extent of some 15 per cent of the whole amount of saccharine material. It is not injurious to the health and does not injure the quality of the beer. There are brewers in New York who have advertised for many years that they make an all-malt beer. Their business has not increased, while the business of other brewers who follow the common methods has multiplied many times. This shows that the public taste does not approve an all-malt beer. Some malt is necessarily used. The starch in the unmalted grain is converted into sugar by the malt which is used with it. A beer made of two-thirds malt and one-third rice is admitted the world over to be superior to all-malt beer. In Germany those who make and sell rice beer take pains to let the public know it. (851-856.)

Dr. WILEY says that the substitution of other substances for malt is practiced almost universally in this country, even by the largest brewers, in making the cheaper grades of beer. The demand for cheap beer leads the brewers to substitute barley, glucose, rice, and hominy grits made from Indian corn, for malt.

Rice is very commonly substituted for a portion of the malt when a very light beer is desired. Glucose or grape sugar substitutes are made in all large glucose factories, and are used most of all for very cheap beer. No beer is ever made without some malt, but the amount of substitution may reach as high as 60 or 70 per cent; that is, a low grade of beer can be made consisting of 30 per cent malt and 70 per cent grape sugar. The grape sugar is used because it requires no action of diastase to prepare it for fermentation, whereas hominy grits or rice must be acted upon by diastase or malt before fermenting, so that more malt is required. It is grape sugar, the solid product of the glucose factories, which is always used in the breweries. The product is not necessarily deleterious to health, but is not pure beer. Pure malt beer has a better flavor, and in the opinion of the witness is not so apt to produce acidity of the stomach or other digestive troubles. In 9 places out of 10 where fermented beverages are sold the purchaser will get a substitute beer, though certain brands of beer are pure. It is almost impossible for the consumer, unless a connoisseur, to tell the difference except by chemical analysis. (19, 21.)

Mr. BUSCH, president of the Anheuser-Busch Brewing Association, states that the beer of this company is made entirely of barley malt, hops, yeast, and water, except that some rice is used in order to make a very pale beer of the Bohemian type. This company has never used any corn or glucose or preservatives or coloring matter. Corn does not make a high grade of beer, because of certain oily substances which it contains. They are partly transformed into fusel oil after fermentation. The quantity of fusel oil is not large enough, in Mr. Busch's judgment, to be injurious to health.

Rice is used not to cheapen beer, but to produce a very pale beer of the Bohemian type. It is twice as expensive as barley malt. Mr. Busch is not opposed to the use of corn, though he uses none himself. He does not think that there can be any good evidence that the use of unmalted grains in brewing is unwholesome. (487, 493.)

Dr. PIFFARD, of New York City, believes that beer made from barley malt is in the main a wholesome drink for healthy people and sometimes a useful drink for those who are ill, but he believes very positively that beer made from corn products and from rice is not wholesome, but distinctly injurious. He also believes that new beer and new ale are not wholesome, and that a great deal of the beer offered for sale has not been kept as long as it should be. Up to within a few years he hardly thinks that a glass of what he would regard as wholesome beer, brewed in the State of New York, could be bought in New York City; but during recent years one brewer after another has been making wholesome beer. His impressions with regard to the character of beer are derived from its physiological effects. Dr. Piffard mentions two difficulties in the way of efficient pure-beer legislation: (1) A document issued from one of the Departments of the United States Government rather favored the use of what he considers improper ingredients in beer. (2) The general public, at least in New York City, prefers the improper beer to the proper beer. There are many persons with whom the imported beers do not agree. Dr. Piffard's impression is that they contain preservatives to a considerable extent. (188, 190.)

Mr. ZELTNER, a lager-beer brewer, says that he makes one brand of beer, called old-fashioned beer, of nothing but barley malt and hops, with yeast and water. The use of unmalted grain, such as corn, in partial substitution for malt, gives a beer of lighter color, and perhaps one that does not spoil so readily, but a beer of worse flavor and less nourishing qualities. Such a beer is cheaper, and Mr. Zeltner makes some of it to meet competition; but the all-malt beer is more wholesome. It is not true that a sufficient supply of malt can not be got for the whole product of beer. Plenty of good barley is raised in this country, and more would be raised if it were demanded. It would be better for the farmer to exclude corn from beer, because the farmer gets a better price for barley than for corn. (456-458).

Mr. LIEBMANN says that for 10 or 12 years he has advocated the use of malt and hops only, but the taste of our consumers prefers the rank beer which is produced by the addition of some raw or unmalted grain. Mr. Liebmann admits that it is doubtful whether the addition of unmalted corn can be detected in the finished beer. Rice might, he thinks, be detected. Mr. HUPFEL says that he has experimented by making beer of rice and corn, and rice and grits, and rice and glucose, and has found that nobody "could say which was which out of the four different kinds," the fourth kind being apparently made from malt alone. Mr. BROWN says that an all-malt beer is injured by the excess of albuminoids which it contains. Too much of them tends to make the beer sour. Rice and corn contain practically no albuminoids. (394-396.)

Mr. HART believes that the craving for beer, which exists particularly among the working people, is an inevitable result of the character of their food, and

particularly of the treatment to which wheat is subjected in the process of preparation. The bran of the wheat contains substances which are absolutely essential to the nourishment of the body, and particularly of the brain. Persons who live on such defective food as the common bread of white flour crave the materials of which they have been deprived; and in beer they find them. If people were fed on whole-wheat food the desire for beer would disappear. The brown bread of Germany is what gave the Germans their superiority over the French in the Franco-Prussian war. Beer should be made from malt and hops. Glucose goes to make adipose tissue. This makes a man heavy and handicaps his brain. (382-386.)

Professor CHITTENDEN does not think that unmalted cereals, like rice or corn, partially substituted for malt in beer, are injurious to health. (424.)

Professor HALLBERG does not consider glucose as bad as a substitute for malt in beer as when substituted for sugar, because the sugar from the malt is converted into glucose in the making of beer. All sugar needs to be converted into glucose before it can ferment and form alcohol. He prefers beer made of hops and malt to beer made of glucose, and thinks every other consumer should have the privilege of choosing. All whisky is made from glucose. The starch of the corn is first changed into glucose, which is then fermented and turned into alcohol. (82, 88.)

Mr. LIPPE asserts that Canadian malt is the best material for making beer, and that the high tariff, by shutting out Canadian barley, has compelled brewers to resort to worse materials. Mr. BROWN asserts that as good barley is grown in the United States as anywhere in the world. Mr. LIEBMANN says that when the tariff on barley was first enacted that grown on this side of the border was not so good as that from Canada, but that our farmers have improved their product, and brewers can now get as good malt as ever. (383, 394.)

Mr. THOMANN, secretary of the United States Brewers' Association, says that the brewers will not make any fight for the privilege of using glucose. They would object to a law which forbade them to use it and did not restrict the liberty of other manufacturers. Glucose is used by candy makers in much larger proportion than by brewers. Only perhaps 15 per cent of the saccharine matter in beer may be glucose. Mr. Thomann understands that the very best candies contain as large a proportion as this, that the medium grades contain from 40 per cent to 60 per cent, and the lower grades 75 per cent. (384.)

Mr. OEHNE, a brewer, says that a pure malt beer is almost unsalable in this country; it is too strong and heavy. Corn and rice, unmalted, are added to make a beer more suited to the popular taste. Mr. Oehne believes that these materials make a beer quite as wholesome as that from pure malt, and more palatable. There is no reason why glucose also should not be used. (295.)

Mr. FECKER says that corn beer is lighter to the tongue and more palatable than malt beer. The degree of fermentation is not so high; that is the cause of the public preference for it. Malt beer is not necessarily heavier than corn beer, but there is a difference in the degree of fermentation, and consequently a difference in the taste. (299.)

Mr. BROWN, president of the Long Island Brewery, states that his beer is made of hops, malt, grits, and sometimes grape sugar. He distinguishes grape sugar as a solid substance from glucose as a liquid. Mr. Brown uses nothing which he does not consider perfectly healthful and proper for people to drink. He believes that the chief cause of brewers being occasionally blamed for making poor or bad beer is the subjection of the beer to unwholesome conditions in the retailer's hands. If the beer is drawn through filthy pipes it will come out full of bacteria which do not belong to it, and much changed in character. (385, 389.)

Mr. LIPPE, president of a brewing company, says that his beer is made entirely from grain and hops. Rice and hominy are used as well as malt; it depends on the market whether he buys one or the other. (380.)

Mr. HUPFEL, a brewer, says that his beer is made of hops, malt, and corn. He does not use any rice. The corn which he uses is unmalted and is called hominy. It is rather finely broken; it is sifted out of the coarser hominy. (379.)

Mr. HACHEMEISTER says that the brewing company of which he is treasurer uses some corn in its beer, besides hops and malt, but no glucose. He believes corn is used to make the beer lighter. (415.)

Mr. BAUER, brew master of the F. & M. Schaeffer Brewing Company, says that this company's beer is made of hops, malt, and water, with some cerealeine, which is a preparation of corn and rice. Very little coloring matter is used. Nothing is added which is not healthful and good for people to drink. In Mr. Bauer's experience in Germany, before he came to this country in 1870, he used hops, malt, water, and a little rice. The methods of brewing in this country are the same as in Germany. (390.)

Mr. KRUESLER says that he uses a little rice in order to make a pale beer. The rice is not over 20 per cent of the material. He does not use corn or glucose or sugar. (377, 378.)

Mr. WIGAN, a brewing master, says that he uses grape sugar in ale and glucose in beer. The percentage of glucose would be from 7 to 10. He also uses perhaps 20 or 25 per cent of unmalted corn as an adjunct to the malt. The use of the unmalted grain gives a light, sparkling beer such as the popular taste now demands. Consumers now demand a lighter beer or ale than formerly. (375, 376.)

Mr. EVANS, a brewer of ale and porter, says that his materials are malt and hops and sometimes corn. (416.)

Mr. PABST states that his beer contains no glucose. (312.)

2. *Hop substitutes.*—Mr. SCHWARTZ says that no substitute for hops is used in this country to his knowledge. When hops are very cheap extracts are made from them to be used when hops are high. This is not a substitution. Lupuline, the meal contained in the hop cone, is also used; but this is a part of the hop itself. It is obtained by tearing open the cones and sifting out the meal. It is impossible to substitute any other substance for hops, because there is no other wholesome bitter which will take their place. (371, 374.)

Mr. WYATT declares that he has never met with an instance in which any substitute for hops has been used in this country. He has seen it stated in the newspapers that aloes is used, but he has never been able to trace the stories and he thinks they are purely imaginary. Aloes would be a very undesirable addition to beer. During the last 13 years he has analyzed 20,000 samples of beer, and his analysis has been such that he would certainly have discovered aloes if any had been present; but he has never found any. He has never analyzed any ale or porter, foreign or domestic, in which he found any substance which he considered deleterious to the public health.

Mr. Wyatt does not count hop extract a substitute for hops. It is simply the essential principles of the hops in a small bulk. It is used to a very limited extent. When hops are very cheap, brewers sometimes buy large quantities and have an extract made to be used when hops are dear. (403, 411.)

So far as Dr. WILEY knows, no substitutes for hops are used in this country by any reputable brewer, but there is a difference in the character of the hops, which range in price from 77 to 17 cents a pound. (19-21.)

Mr. BAUER, a brew master, who learned his trade in Germany, says that he has never used any substitute for hops, either in Germany or in America. (390.)

Mr. WIGAN, a brew master, says that he uses no substitutes for hops. (375.)

Mr. LIPPE, president of a brewing company, says that he uses no substitute for hops. (381.)

3. *Defective materials.*—An affidavit of the managing director of Arthur Guinness, Son & Co., Limited, expresses the opinion that stout brewed from defective materials must suffer in flavor and stability. It states that the malt used by the Guinness Company is carefully selected to exclude any excess of moisture, which might cause an undue formation of lactic acid in the stout, and to exclude insufficiently cured or moldy malt, or grain insufficiently modified in the malting process. (544, 545.)

Mr. WYATT says that the boiling of the wort for from 2½ to 3 hours would remove any injurious effects from any musty or deteriorated material which might enter into the beer. The hops would also help. (409.)

Mr. FECKER denies that the need of preservatives is increased by the use of cheap malt or hops. Cheap hops contain less of the hop extract than better ones, and do not give the beer so good a flavor. That is the only difference. (299.)

Mr. OEHNE denies that the use of cheap or unripe or imperfect hops and barley would make it necessary to use a preservative in beer. The only difference that would arise from the use of inferior materials would be that the beer would contain less alcohol. It is true that alcohol is the element which preserves the beer. (297.)

Mr. ZELTNER, a lager-beer brewer, says that one malt may give a larger percentage of extract than another, but an extract of poorer quality. The difference is produced by the method of malting. An honest brewer ought to look for the quality of the extract rather than the amount. (458.)

4. *Adulterations.*—Mr. PLAUTZ declares that no adulterants are used in the manufacture of beer. One can use a lower grade of material, and so make a cheaper grade of beer; but it is not an adulterated beer. (301.)

Mr. THOMANN, secretary of the United States Brewers' Association, declares that this association has repeatedly placed itself on record as utterly opposed to the use of any adulterations which are injurious to health. The brewers have contributed largely to the Pure Food Congress, and have by resolution approved its action. The brewers are also opposed to any adulterations which lower the

quality of the goods. The brewers do, however, claim the right to choose their own materials, provided they choose materials which are wholesome and not injurious. (351, 352, 356.)

Mr. SCHWARTZ says that isinglass, which is composed of fish bladders, is used to settle or clarify the beer. Nothing of it is dissolved. It settles to the bottom and is removed with other suspended matters. (371, 372.)

5. *Color of beer.*—Mr. BUSCH says that he uses no coloring matter in beer, but that the color is determined by the temperature at which the malt is dried. For dark beer malt is prepared at a temperature of about 65 degrees Réaumur; for light beer, at about 45 degrees. (489.)

Mr. LIPPE says that for coloring beer he uses dark malt, or sometimes burnt sugar. (381.)

Mr. SCHWARTZ, a consulting brewer, says that very little coloring matter is used in beer except the colored malt. Sometimes burnt sugar is used, but the quantity is small. (371.)

Mr. WACKENHUTH, a brew master, says that he uses caramel malt and burnt malt for coloring beer. (418.)

B. *Process of manufacture.*—1. *Generally.*—Mr. WYATT describes the process of the manufacture of beer and ale. When the beer has been boiled in the kettle and brought to the required gravity or strength, it is sent over a cooler into a large receiving vat, and there mixed with yeast. Yeast is a plant which is propagated in the brewery from year to year as other plants are propagated in the ground. For every pound of yeast which is planted in the beer a crop of 5 pounds of yeast is developed. In the manufacture of ale the yeast rises to the top; in lager beer the yeast settles to the bottom. This difference depends upon a difference of temperature; ale is fermented at a higher temperature than beer. The yeast in the process of growth breaks down the maltose sugar in the solution and decomposes it into practically equal parts of carbonic-acid gas and alcohol. The carbonic-acid gas passes off; the greater part of the alcohol remains in the beer. In the present state of scientific knowledge it is possible to regulate the mashing process so that the resulting beer shall have any desired composition and any desired per cent of alcohol.

The fermentation takes about 10 to 18 days. By that time the beer has lost about 55 per cent of its original gravity; if it originally showed 12 on the scale, it now probably shows 5 or 5 $\frac{1}{2}$. Then the yeast is allowed to settle to the bottom and the fermented beer is taken to the storage cellar, where its temperature is reduced to the point at which bacteria or foreign organisms will not work. This temperature is about 33 or 34 degrees Fahrenheit. Here the beer remains until all the albuminoids have been deposited, and the beer is practically brilliant. The period in the storage cellar is about six weeks. From the storage cellar the beer goes to the chip-cask cellar. There it is treated with a small quantity of fresh beer. In order to impregnate it with carbonic-acid gas it is generally bound under a pressure of 6 $\frac{1}{2}$ to 7 $\frac{1}{2}$ pounds, or about half an atmosphere. The carbonic-acid gas is absorbed in direct proportion to the pressure, and half an atmosphere has been found enough to saturate the beer with gas. When the fresh beer has completely fermented, and no further evidence of cloudiness appears, the beer is passed through a filter into the trade package and sent out for sale. The whole process occupies about 2 $\frac{1}{2}$ or 3 months. This is the process used by 95 per cent of the brewers in the United States. (404, 405.)

2. *Exclusion of bacteria.*—Mr. BROWN, president of the Long Island Brewery, states that Professor Pasteur tried some years ago to make beer that should never spoil, by making it without letting it come in contact with the air. He built a brewery for this purpose. He made what he called a perfect beer, "but it was so perfect that no one would drink it." Mr. Brown says that the peculiar excellence of the beer made in certain places is due to the bacteria which the beer derives from the local air. The excellence of Munich beer is due to the local bacteria. Mr. Brown took the trouble a year ago to get pure yeast from the Bavarian Government. He has since used it exclusively in his brewery. But it has not changed the taste of the beer at all. Mr. LIPPE says that his brewery did the same thing, and with the same result. Both agree that it is the local bacteria, and not any peculiarity of the yeast, that gives the peculiar local flavor. (387.)

Mr. WYATT believes that some very exhaustive experiments have been made in the filtering of the air to which beer is exposed, or in the carrying on of fermentation in a vacuum, in order to exclude bacteria. He would regard such a process as desirable if it could be brought to such a point that relatively unskilled men could handle it. That is almost impossible. At the moment of putting in the bung a small space is exposed, and the germs get in and undo all that has been accomplished. (408.)

3. Aging.—Mr. WYATT, a brewer's chemist, says that there has been much popular prejudice against the sale of what is called immature beer. A mature beer can be nothing else than one which has been properly fermented, and which, consequently, will not rapidly undergo decomposition on change of temperature. The talk of immature beer refers to beer whose temperature has been rapidly reduced by means of an ice machine on removal from the fermenting room, and which has been cleared from impurities by means of filtration, instead of being allowed to cool and settle in the storage room for six weeks. The cooling and the settling are the only changes which take place after the beer has been fermented to the desired point in the fermenting room. The aging of beer adds nothing to its actual value for consumption. The statement that a perfectly mature beer increases its alcohol and decreases its malt extract by long storage is a mistaken statement. In the case of a wine or a stock ale, or any beer which could be kept at a high temperature, Mr. Wyatt would consider the possibility of the oxidation of the alcohol into ether, with a gain in flavor and acceptable qualities. But lager beer is stored in a cold atmosphere, which arrests chemical change. At the same time there are some wild yeasts which act at very low temperatures, and which sometimes get into beer and injure it. This affords an argument against the storing of beer for any considerable time. (405, 406.)

Mr. BAUER considers that beer ought not to be stored over 8 months, and that it is just as good after 6 weeks as after a longer time. The sooner the beer is sold the more malt extract and the less alcohol it contains. For export it is probably best that the beer ripen about three months. (392, 393.)

4. Pasteurizing.—Mr. WYATT regards the pasteurizing of bottled beer as the most scientific way of preserving it, but not as an economical way. If the bottles are filled too full they break, through the expansion of the liquid by heat.

It is desirable to keep the pasteurizing temperature as low as possible, say 140° F. Some germs resist that temperature, and some beer must consequently be heated to 150° or 155° in order to preserve it. In order to keep down the temperature and still make certain that the beer will keep, a little salicylic acid is put in. Many efforts have been made to pasteurize the beer in casks, but the beer has never been made satisfactory. It is easy to make it sterile, but it is made flat at the same time and acquires an unattractive odor and taste. (407, 408.)

Dr. WILEY says that the process of pasteurizing is meant to keep the beer only long enough for home consumption. The temperature is only 140°. The hand can easily be held in water at that heat. This heat is sufficient to kill the yeast ferments, but not to kill the lactic and butyric ferments. If these were destroyed the beer would be rendered flat and unpalatable. (359.)

Mr. BUSCH states that bottled beer for export is pasteurized by the Anheuser-Busch Brewing Association by being heated in a water bath, after it is bottled and wired, to a temperature of about 50° Réaumer. (489.)

Mr. BAUER, a brew master, says that he pasteurizes beer, but only for exportation. He bottles beer for the local trade without pasteurizing. In pasteurizing he brings the beer to a heat of 145° to 150°, and sometimes to 160°. (890.)

Mr. KRUESLER says that his bottled beer is pasteurized at a temperature of 140° to 160°. If it is to go to a very hot climate it is heated a second time after cooling. (377.)

Mr. WIGAN says that he pastuerizes beer by heating it to 140°, or 158°, or 160°, according to the variations of climate to which it is to be subjected. (378.)

5. German and American beer.—Mr. LIEBMANN says that on account of the different conditions of the atmosphere in Germany, anything which has to undergo fermentation will stand exposure there for a longer time than in this country. Beer brewed in Germany is longer in maturing and keeps its taste much better than beer brewed here. (894.)

Mr. BUSCH, president of the Anheuser-Busch Brewing Association, asserts that the best American brewers make a better beer than any in Europe, and that Europeans admit this, if Americans do not. One who has drunk American beer for 20 years is in better condition, if he drinks fine beers, than the German beer drinker of 5 years. But he must select what he drinks. There are good beers and bad beers both in Germany and in America. (491, 493.)

6. Cloudiness of beer.—Mr. ZELTNER, a lager-beer brewer, says that some excellent lager beer becomes turbid or cloudy at a low temperature, and becomes bright again when the temperature is raised. The reason seems to be that the albuminoids are congealed when the temperature is lowered and are dissolved again as it rises. Such a beer is likely to be rejected by ordinary people, because it does not appeal to the eye. But the albuminoids, the abundance of which cause the turbid appearance, are the most valuable nourishing constituents of the genuine malt beer. Such beer is far more wholesome to drink than that which is kept bright to the eye with antisepsics. The prejudice against it is

largely due to the unfortunate habit of drinking beer from glasses instead of mugs. (459.)

7. Composition and gravity of beer.—The managing director of Arthur Guinness, Son & Co., Limited, states in an affidavit that the original specific gravity of the stout brewed by that company for export before fermentation is from 1072 to 1074, and that the stout as it is sold in the market contains about 6.1 per cent by weight of absolute alcohol and 6 per cent of solid matter. (545, 546.)

Mr. HUFFEL says that the body of beer is estimated on a German scale known as kaiser. Some beer is brewed at 12 per cent kaiser and some at 10 per cent. Mr. Brown explains that 10 per cent kaiser means 10 per cent of malt extract (379.)

8. Ale and porter.—Mr. EVANS, a brewer of ale and porter, says that ale is brewed with top fermentation and not in cold storage. Porter is brewed in the same way, but is brewed with roasted malt; that gives it the black appearance. (416.)

9. Malt extract.—Mr. EISNER says Hoff's malt extract is made of malt and bitter principles only. Other bitter principles as well as hops are used, but the process is a trade secret. The bitters are of vegetable origin and beneficial to health. No antisepsics or preservatives are used. The extract is pasteurized at 55° Réaumur.

Mr. Eisner says that the difference between malt extract, like Hoff's, and beer, is that the malt extract contains a minute quantity of alcohol and a large quantity of malt, while beer is the other way. He declares that every brewer is now selling beer as malt extract. (432, 438.)

C. Foreign labels.—*1. Genuine.*—Mr. SHAND, a representative of Arthur Guinness, Son & Co., Limited, states that some of the products of this company are shipped to New York in bulk for bottling purposes, though far the greater part is bottled in Dublin, Liverpool, and London. The Guinness stout is sold for bottling to only one concern in the United States. Labels are furnished by the company itself for exactly the quantity delivered to the bottler. The company insists that these labels be used. The stout is not sold for bottling except under an agreement that the company's own label shall be affixed to each bottle put up, and that the customer will not bottle any other black beer. (547.)

2. Spurious.—Mr. BROUN, a bottler of Bass's ale and Guinness's stout, says that he receives these goods from abroad in hogsheads of 62 gallons each, and bottles them in New York. He is subjected to great trouble and loss through forgeries and colorable imitations of his labels. He has had 35 to 40 such cases in the past 5 years. The goods so fraudulently sold are in most cases of American manufacture. The labels are perfect facsimiles of the originals; in some cases made from photographs. Some cases have been prosecuted and convictions have been obtained under State laws, followed by imprisonment. Some cases have also been prosecuted in the United States courts under the trade-mark laws. There has been no trouble in getting convictions, but there has been a good deal of trouble in getting evidence. Besides the counterfeiting of labels, Mr. Broun suffers from the refilling of genuine bottles. This is very difficult to prove. These fraudulent practices involve great loss to the Government as well as to the business of the witness. Foreign ale pays a duty of \$6 a barrel, while domestic ale pays an internal-revenue tax of only \$2 a barrel. (390, 400.)

Mr. ROCHE, who is associated with Mr. Broun in his bottling business, declares that he supposes their brand has been infringed a thousand times in the last 10 years, and a dozen convictions have been obtained. (414.)

D. Foreign brewing regulations and standards.—*1. Various countries.*—Mr. THOMANN presented a letter from the editor of the Petit Journal du Brasseur, of Brussels, relating to foreign brewing regulations. It is stated that the law of Belgium permits any legitimate materials to be used. Large quantities of wheat, rice, and maize, as well as barley malt, are used, and in some districts oats and rye have formed part of the grist from time immemorial. Sugars and glucoses are also in general use. The use of antisepsics is absolutely forbidden, except that sulphurous acid and its compounds may appear in quantities not exceeding 14 milligrams of the acid to the liter of beer. The sulphurous acid is legally supposed not to be added to the beer, but to be derived from the disinfecting of the cask. In fact it is introduced into the beer. Coal tar saccharin was formerly much used, but is now forbidden. Harmless bitters and tannin may be used as hop substitutes.

All legitimate materials may be used in France, and all cereals are used. Saccharin and salicylic acid are forbidden. Sulphites seem to be tolerated, and the writer believes that fluorides and creosotes are used to some extent. Tannin and harmless bitters may be used as hop substitutes, and the use of tannin is large. Such materials as ginger, cloves, and pepper are used, though the writer believes that only inferior sorts of beer contain any considerable amount of them. The

use of tannin is due to the dislike of the people for a bitter beer. The beers are very weak, varying from 1025 to 1045. The quantity of hops varies from 2 per cent to 8 per cent of the weight of the malt; but even the smaller quantity sometimes makes the beer too bitter. Tannin is then used in the hope that it will do for the beer what an excess of hops would do, without the disadvantage of the bitterness.

The writer believes that Bavaria is the only country in the world where barley malt, water, and hops must, by law, be the only ingredients of beer. No other State even in Germany has ever applied this regulation. (361, 362.)

Mr. BUSCH says that there is no uniform law in regard to beer in Germany. Some States forbid the use of raw grain. In Bavaria nothing can be used but hops, malt, water, and yeast. There is no standard or test of beer, even in Bavaria. A cheap beer can be made by using a common article of malt and hops and making it thin. The amount of beer to be made from a certain amount of malt is not limited by law. (489, 490.)

Mr. BAUER states that in his experience in Germany the Government compelled the use of a certain amount of malt to a barrel of beer. This regulation was made for fiscal reasons, because the tax was levied on the malt and not on the beer. The Government did not fix a standard of specific gravity. (390, 391.)

2. *German standard analysis.*—The following table was shown to several witnesses as being the German standard of composition for beer, as established by Professor Gustav Rupp and adopted by the German Government:

Chemical combinations of 100 cubic centimeters of standard beers.

	Specific gravity.	Water.	Carbonic acid.	Alcohol.	Extract.	Albumen.	Sugar.	Dextrin.	Glycerin.	Lactic acid.	Mineral substances.	Phosphoric acid.
Lager	1.0162	90.06	0.196	3.98	5.79	0.71	0.88	3.73	0.165	0.151	0.228	0.077
Export beer.....	1.0176	89.01	.209	4.40	6.38	.74	1.20	2.47	.164	.161	.247	.074
Bock beer.....	1.0213	87.87	.234	4.69	7.21	.78	1.81	3.97	.176	.165	.268	.089
Ale.....	1.0140	88.00	.200	5.00	6.40	.54	.95	1.70	.250	.260	.300	.160
Porter.....	1.0200	88.10	.190	4.90	9.60	.60	2.40	2.80	.240	.250	.340	.085
Condensed beer.	1.0657	55.80	.....	19.72	24.25	1.30	11.82	7.48	.....	.210	.350	.160

Composition of beer ash.

[Calculated for 100 cubic centimeters of beer.]

Potassium	33.67
Sodium	8.94
Calcium	2.78
Magnesium	6.24
Ferric oxide .....	.48
Phosphoric acid	31.35
Chlorides	2.98
Sulphuric acid	3.47
Fluoric acid	9.29

Mr. HUFFEL thinks that this represents about the average composition of beer, but he says that no two brewers will put out exactly the same product. (888.)

Professor CHITTENDEN thinks that the standard suggested is a reasonable one. The quantity of alcohol agrees substantially with his experience in the analysis of ordinary beers. He has not analyzed condensed beer or malt extract. (426.)

Mr. BROWN says that this standard appears to relate to a finished beer after fermentation. The composition of beer continually varies with its age. Beer which has just been brewed contains a larger percentage of sugar and malt extract and a less percentage of alcohol than beer which has stood longer. After the beer comes out of the fermenting vats a silent fermentation still goes on, and the proportion of sugar decreases and the proportion of alcohol increases. The suggested standard, showing a proportion of sugar in one case as low as 0.88 and a proportion of alcohol as great as 3.98, seems to refer to a beer which is old and thoroughly fermented out. (888.)

Mr. BAUER expresses the opinion that the analysis must have been of a very old beer; one which has been kept longer than beer is ever kept in this country. (381.)

Mr. WYATT says that it would be absurd to attempt to establish these standards definitely, but that they seem to represent in a general way perfectly fair averages of the beer now made in this country. Mr. Wyatt does not think that there is any fixed standard of beer in Germany; the Bavarian law prohibiting the use of anything but malt and hops was made for fiscal purposes. He denies that long storage of perfectly matured beer tends to increase the alcohol and decrease the malt extract. (406, 410.)

E. Proposed legislation.—1. National regulation favored by brewers.—Mr. FECKER, manager of the United States Brewing Company, thinks that national regulation of the manufacture of beer is desirable, in that it would diminish the prejudice which a majority of the people seem to feel against the brewing business. Mr. Fecker was one of the originators of a petition for such legislation. (298.)

Mr. PLAUTZ thinks that a national law for the inspection of beer would be a good thing for the brewery interest, because it would remove the prejudice that a great many people have against the use of beer. (301.)

Mr. OEHNE is not opposed to government inspection of beer, and he believes that the Retail Bottlers' Association has petitioned Congress to look into this question, because so much has been said about adulterated beer. (298.)

Mr. PABST thinks that a national law for the regulation of brewing would be a very good thing. (311.)

2. Legal standard favored by brewers.—Mr. O'REILLY, editor of the Liquor Trades Gazette, believes that the brewers would be willing to have a national law fixing the standard for beer, rather than face the troubles that would result from State legislation. (462.)

Mr. ZELTNER, a lager-beer brewer, would have a legal standard fixed for beer, upon an all-malt basis. The public should know just what goes into the beer which it drinks. Beer should be regarded as inferior or adulterated in the proportion in which other cereals are substituted for barley malt. (456, 459.)

Mr. HUPFEL, a brewer, would not object to a regulation of the materials which may be used for beer, provided it were made by the United States Government. He would think it wrong that a single State should establish such a regulation. That would place the brewers of that State at an unjust disadvantage as compared with the brewers of other States. (380.)

Mr. HACHEMEISTER thinks that it would be an advantage to the honest brewers to have a uniform standard fixed by United States law. He does not think that it would be fair to establish a standard by State law, because that would give an advantage to competitors in other States. (416.)

Mr. LIPPE, president of a brewing company, thinks that all good brewers would welcome a law of Congress to prohibit the use of anything but grain and hops in beer. It is for fiscal reasons, however, that this regulation is enforced in Bavaria. The beer tax in Bavaria is not levied on the beer but on the malt. If such a law were to be established in the United States, the most important thing would be to frame it so that it could not be evaded. Mr. Lippe does not think that such a law is needed by reason of any large amount of adulteration of beer. No other article made and sold in the United States is so pure. Mr. Lippe would think it proper to prescribe a minimum amount of malt extract which all beer should contain. (381-384.)

Mr. Lippe thinks that the law should make it compulsory to brew beer from grain and hops only. He considers that the brewing industry has been injured by the exclusion of Canadian barley, which he regards as the best brewing material, by the tariff. (393.)

Mr. BROWN, president of the Long Island Brewery, believes that the brewers would welcome a standard of composition fixed by the United States Government; say a standard below which it should not go in original gravity. Such a standard would relieve them from the cry against bad or impure beer, from which they unjustly suffer. A State standard would be injurious, because beer not up to the standard might be brought in from other States to the injury of the local brewers. (388, 389.)

Mr. WYATT thinks that brewers should be permitted to make beer of any gravity which they please or which their customers require; but that it might be forbidden by law to sell any beer which did not contain 45 per cent of its original gravity in extract, or any beer or ale which did not contain 35 to 40 per cent. (409.)

3. Uniform standard opposed by brewers.—Mr. BUSCH, president of the Anheuser-Busch Brewing Association, indicates that, as a brewer of the finest beer, he would not approve a law which should undertake to prescribe a uniform quality

for beer. He would regard such a law as disadvantageous to the good brewer. If articles are put into beer which are injurious to health, a law should be passed to protect the public. Otherwise there is no need of legal interference. A mixture of corn and barley malt makes a standard beer, and the grade of beer ought to be measured according to the materials that are put into it. A minimum standard of beer would not work any hardship to the honest brewer, but the main thing is that the public should be informed of the articles that enter into the brews. (491-498.)

Mr. SCHWARTZ, a consulting brewer, thinks it impossible to fix a legal standard for beer, as to its gravity or the percentage of alcohol. He does not know that this is done in any country, and he asserts that the amount of beer which may be produced from a given amount of material is nowhere limited, although in some countries the beer tax is based on the amount of material consumed. (374.)

Mr. WACKENHUTH, a brew master, does not see how a national law could be framed which should control the standard of beer. Beer must be made both light and dark, both sweet and bitter, to suit various tastes. (418.)

4. Variable standard proposed.—Professor CHITTENDEN suggests that a standard of beer might be fixed, not absolutely, but with a reasonable provision for variation. A definite figure could not be established unless as a maximum or a minimum. (426.)

5. Legal standard for malt extracts.—Mr. EISNER would greatly approve of a national law fixing the standard of this product. He states that the German and Austrian governments do compel the percentage of malt extract to be marked. Beer could not be sold as malt extract without a certain percentage of extract or "krenzen," namely, 20 per cent of malt extract. Very little beer is sold in this country which has 10 per cent. (432, 488.)

IX. WINE.

A. Blending, artificial fabrication, and adulteration.—Dr. WILEY distinguishes 3 kinds of blending: (1) In all wine countries wines from different vineyards, having different flavors due to local causes, are blended to make from year to year uniform wine. This the witness considers perfectly legitimate and even praiseworthy, because it secures a uniform standard and quality. (2) Beverages are also blended or compounded so as to produce a strictly artificial mixture. For instance, by mixing 10 or 12 per cent alcohol, 8 per cent of such materials as sugar and glycerin, a dash of tannin, a red coloring material, an artificial flavor made by a chemist, a drop or two of essential oil, and a little burnt sugar, one can make a claret, or a red mixture which has chemically the same materials found in genuine claret and which may taste like claret and looks like claret. Only the most careful chemical examination or a very expert or cultivated taste could distinguish the difference. This kind of blending the witness pronounces fraudulent; the compound is less palatable and less wholesome and may be positively injurious. We can imitate the chemical constituents, but never can imitate nature in making them palatable and wholesome. (3) The third form of blending, which is far more common than the others, is the process which is made to take the place of aging in distilled liquors. (53, 54.)

Three samples of wine examined by Dr. Wiley, all purporting to have been made at Paducah, Ky., and marked "sherry," "port," and "sweet catawba," were absolutely artificial, and contained no fermented grape juice at all. They were made of alcohol and commercial glucose, a little tannin, and aniline dyes. The coloring matter was in such large quantities that several tufts of wool were beautifully dyed with colors taken from one sample. These wines imitated in a general way the flavor, the aroma, and the taste of the genuine articles, and could be sold to persons not acquainted with the properties of wines without their fraudulent nature being discovered. (586.)

Mr. WYATT, a brewer's chemist, says that the chief adulterations which he has found in wines have been aniline dyes. He regards the use of coloring matter for wine as reprehensible, though not now so deleterious to the health as formerly, because the aniline dyes can now be prepared without the use of arsenic.

There is another common sophistication of wine, not properly an adulteration—the addition of alcohol. Wine which, by ordinary fermentation, would contain 7 or 7½ per cent of alcohol has enough alcohol added to bring up the percentage to 10 or 11. (410, 411.)

Mr. EMERSON, president of the Brotherhood Wine Company, thinks that there is very little adulteration or mixing of American wines. (507.)

Mr. HOCHSTADTER asserts that there is more adulteration of liquors in Europe than in America. "They send us wines that have never seen a grape, and which

they could not sell or use in their own country, and are prohibited from use there by law; but there is no prohibition against their exporting them to this country." (470.)

Mr. EITEL, an importer of wine from Spain, France, and Germany, says that the law of the wine-producing States of Germany is very strict, and the amount of sugar or other substances which may be added to wine is limited. It is permitted to make what is called artificial wine, but it must be labeled and sold under that name. A beverage called a second wine is also made by the addition of chemicals and sugar to the pressed grapes, but it must be sold for what it is. (291.)

Mr. ROSSATI, a wine expert, employed by the Italian Government to analyze Italian wines after their arrival in this country, exhibits the regulations of the Italian Government for the certification of wines. Importers of Italian wines may apply to the office maintained by the Italian Government in New York, and the official representative will take samples and apply a label showing that the wine is in the course of examination. The label is to be so applied as to prevent any change in the contents of the package. If the wine is found pure, clean, and healthy, a label testifying to these facts will be so applied that it must be destroyed in order to open the cask. If the wine is adulterated or defective, the Government representative will give a certificate stating the adulteration or defect, and this certificate may be made the basis of a claim for damages against the shipper. In the case of wines certified pure, "the technical operations that the importer may think necessary to permit upon the same in order to render them acceptable to the consumer, and for their better preservation, must be supervised by the Government representative, in order that nothing may be done to injure their character and healthfulness." (445.)

Mr. Rossati declares that he has never found any sample of Italian wines adulterated, though he may occasionally have found wine a little out of condition. The Italian laws are very strict and punish the adulteration of wines, not only with fines but with imprisonment. Moreover, wine is so cheap in Italy that there is no incentive to adulteration. (446.)

Mr. ZUCCO, president of the Italian Chamber of Commerce of New York, says that there have been some adulterations in this country of wines brought from Italy, but that they have been upon a small scale; hardly large enough to do any great harm. (485.)

B. Champagne.—*1. Definition, and process of manufacture.*—A letter was presented from the proprietors of Bonfort's Wine and Spirit Circular, in which it is stated that the word "champagne" is properly used only to designate wines grown in the old province of Champagne, in France, and that the French courts prohibit the manufacturers of sparkling wines in any other province from calling their product champagne. The letter declares that neither in Germany, Italy, or in any other wine-producing country, nor in France, outside the province of Champagne, have people any right to call their product "champagne," nor do they do so, save as a means of deceiving the unwary purchaser. (571.)

Mr. RIOPEN, a maker of carbonated champagne, says that the word "champagne" originally designated only wine from the old province of Champagne, in France, whether effervescent or still; and for more than 50 years no such wine has been marketed in this country. General usage has given the name champagne to all effervescent wines, regardless of the place of origin or the manner of preparation. This definition is unanimously accepted by the trade and the public, and is acknowledged in every modern dictionary and encyclopedia. Mr. Ripen asserts that the Standard Dictionary and the last edition of the Encyclopedia Britannica sanction this usage. Mr. Ripen declares that neither he, as a maker of artificially carbonated wines, nor those who manufacture what is called champagne fermented in the bottle, make champagne, in the original sense of the word. "Even the stuff that comes over here from abroad is not champagne any more." (569, 571, 578.)

Mr. EMERSON, president of the Brotherhood Wine Company, defines champagne as a sparkling wine, made by the French process of fermentation in the bottle, which requires from 3 to 4 years to complete. He describes the process of production in the following terms: "The process is in the first place to have your grapes absolutely clean, well picked over, and the proper variety of grapes to produce the flavor that you wish in the champagne. Then it is crushed and the juice is put in barrels or casks and allowed to ferment. In the spring this wine is taken and put into a large tank—what we call a bottling tank—holding from 2,000 to 4,000 gallons. It is then bottled, after the addition of some older wine. Champagne always contains more or less old wine. The perfection of the champagne comes in in the perfection of the wine and in the careful and judicial selection of the grapes to make the original blend before they are pressed, and

also in the care and skill that is taken in regard to developing the wine in regard to temperature. Then it is bottled and allowed to remain in a moderately warm place until fermentation commences in the bottle. As the fermentation proceeds the bottles break more or less, and that is the only way that we can tell how the fermentation is proceeding. After it gets to a certain point and the bottles are breaking too fast we move that champagne into a colder apartment, so as not to entirely chill the fermentation, but so as to lessen it and lessen the pressure slightly on the bottle. It is gradually moved from one apartment into another until at the end of perhaps 3, 4, or 6 months it arrives at the coldest cellar that we have, which we call our storage cellar. There it lies in tierage, lying on the side, to keep this gas from escaping and also to economize space. It lies there from 3 to 4 years in properly made champagne. Then it is taken and put on tables which have holes made through them—plank tables, set in the form of an A, with holes intended to hold the bottles. When it is first put in it is quite flat and a sediment is formed from the fermentation which falls directly to the bottom of the bottle in a little streak. It is shaken every day by a dexterous twist of the wrist and gradually raised up until in the course of some weeks—sometimes 2 weeks, but sometimes 3 months, according to the obduracy of the sediment to leave the bottle—it arrives at a vertical position. When the sediment is directly on top of the cork, then we take the champagne from there and take it up to the finishing room, carefully keeping the bottle with the cork down, so as not to disturb the sediment. In the finishing room it is disgorged; that is, the cork is dexterously taken—withdrown—allowing the sediment and a small portion of wine to be removed. The escaping gas is allowed to blow out with the sediment. Then it is put on a finishing table and a small dosage is added to it to slightly sweeten it and render it a little more palatable. That addition is called dosage."

The dosage consists of rock candy and old wine; a very small percentage is used. Some of the carbonic-acid gas escapes in the removal of the sediment, but the bottles originally contain more gas than is needed. (501, 502.)

Mr. HILDRETH, president of the Urbana Wine Company, gives substantially the same account of the method of manufacturing champagne, and he adds that the only difference between the French and the American champagnes is that the French wine has little or no flavor of its own, and the French makers add liqueurs or cordials, while American makers depend entirely upon the flavor of the grape. He also says that wine should be kept from 3 to 6 months after the dosage is added, to allow the sirup to blend with the wine. According to Mr. Hildreth almost any grape will make champagne, though some grapes produce gas in the fermentation better than others, not to speak of the different flavors which different kinds of grape will give. He declares that the wine made by his company and by other manufacturers of American champagne is as fine as any in the world. That is the judgment of competent experts when they can be induced to try the American goods without prejudice. (509-512.)

Dr. MCMURTRIE states that he has seen the process of the manufacture of champagne as carried on in the neighborhood of Epernay, in France, by one who has inherited the manufacture from his ancestors. The clean juice of the grape, after fermenting for a time in an upper cellar, is transferred to a lower cellar, probably 50 or 60 feet under ground, where the temperature is uniform at about 55°. Here the fermentation is nearly stopped by the coolness, though a slow fermentation peculiar to this kind of wine goes on for some time. After the wine becomes clear it is put into bottles and slow fermentation is allowed to continue in the bottle. By dexterous manipulation all sediment is brought to the stopper and blown out. Sometimes some of the finest sugar, if it is needed, is added, and the bottle is again stoppered. It is generally believed that in this process of fermentation certain peculiar ethers are formed which give the wine its bouquet, and which also undergo decomposition, with a continuous liberation of carbonic-acid gas, after the wine is opened. It is the presence of these ethers which is believed to cause the prolonged effervescence of wine produced in this manner. Wine which is fermented by the ordinary method of producing a still wine, and is afterwards charged with carbonic-acid gas, will continue to give off gas for a considerable time, provided it is kept cool; but if the wine is warmed, say to 55°, the gas is liberated rapidly and the wine quickly becomes flat. (602, 603.)

Mr. EMERSON asserts that there is practically no difference between French and American champagne, if only true champagnes produced by fermentation in the bottle are considered. American makers are using the French methods, based on the experience that it has taken the French makers 200 years to acquire. The word "champagne" originally designated the place of origin; but the champagne makers gradually came to get their materials outside of their own district, and the word now designates a wine made by a particular process, no matter in what

place. German champagne and French champagne are distinguished in the trade, as well as American champagne. Mr. Emerson does not know that there is any sophistication or adulteration of champagnes aside from the selling of still wines artificially carbonated under the name of champagne. The true champagne, according to Mr. Emerson, could hardly be adulterated. If it contained any impurities it would not respond to the process of manufacture. It would not sparkle. (501, 505, 506.)

Mr. COOK, president of the American Wine Company, says that what is called dry champagne differs from sweet champagne only in having less sirup added to it. No preservatives are used in the manufacture of genuine champagne. (518, 519.)

2. Artificial carbonation.—Mr. EMERSON, president of the Brotherhood Wine Company, says that there is a wine which is called champagne, but which is made by taking still wine and forcing into it carbonic acid, which is made from sulphuric acid and marble dust. The process is the same as that of charging mineral water or soda water. It is a far cheaper process than that of making true champagne, and the presence of these spurious goods in the market interferes greatly with the sale of real American champagnes, not only by competition, but even more by the prejudice which they create against all American champagnes. The amount of this spurious champagne is very large. Imported wine of the same character is understood to be sold in a limited way, but the present high tariff keeps it out for the most part. (508, 507.)

Mr. HILDRETH, president of the Urbana Wine Company, Mr. BAUDER, manager of the Pleasant Valley Wine Company, Mr. COOK, president of the American Wine Company, and Mr. WHEELER, a producer of champagne, make similar statements. Mr. Wheeler says that the makers of the spurious champagne can buy the still wine, carbonate it and ship it in a day or two, and turn their money over every 3 months. In the manufacture of the genuine article capital is necessarily invested from 3 to 5 years. Mr. Wheeler says that a great deal more of the carbonated wine than of the true champagne is produced in this country, and that the sale of it is growing. Mr. Hildreth confirms the statement that very little artificially carbonated wine is now imported, on account of the high duty. The prejudice against all American champagne which results from the sale of the spurious product is chiefly complained of. (508-524.)

Mr. BAUDER believes from some small experience of his own that artificially carbonated wine is unwholesome. He considers, however, that people have a right to manufacture such a product, provided they sell it for what it is. The great trouble is that the sale of such wines under the name of champagne leads many people to suppose that all champagnes made in the United States are made by the artificial process. This interferes greatly with the sale of genuine goods. (514, 515.)

Mr. WHEELER says that for the artificially carbonated wines which are sold under the names of champagne any light-colored wine can be used. It is sweetened to the degree desired, put into a cylinder and charged with carbonic-acid gas under a pressure of 70 or 80 pounds per square inch, then bottled and corked. (521.)

Dr. WILEY says that his analysis shows that an artificial champagne can be easily detected by chemical means, as well as by taste and odor. (590.)

Mr. EMERSON says that a glass of still wine artificially carbonated to resemble champagne will sparkle for a few minutes and is then dead, while a glass of genuine champagne will bubble for 2 hours. (504.)

Mr. COOK asserts that artificially carbonated wine, such as is sold for champagne, can be produced for one-fourth of the cost of the genuine article. (519.)

Mr. RIPEK, a maker of carbonated champagne, says that he buys his wine from a certain district in California. It is guaranteed to him to be pure, containing no added ingredients. He receives it when it is not less than 3 years old, and keeps it in storage, undergoing a process of clarification and preparation, for not less than 6 months. No deleterious substance, no preservatives, no chemicals of any kind are added. It is necessary to have an absolutely pure article, because you will otherwise have a precipitation in the bottle. The foreign ingredients will combine and produce a precipitate, and the wine will become dark and thick. The wine is carbonated with carbonic-acid gas which is as pure as it can possibly be; it is bought under a guarantee that it is 99 $\frac{1}{2}$ per cent pure. The wine stands about a month after carbonating before being put on the market. It will effervesce longer than any natural wine made in this country, and about as long as the better grades of imported champagnes. (569, 570, 579.)

Mr. Ripek does not believe that carbonic-acid gas is now made from sulphuric acid or marble dust. That which he uses comes from natural springs and is clarified. He believes that the carbonated wine, instead of costing only one-

fourth as much as that fermented in the bottle, costs probably 85 per cent as much. He does not believe that there ever was a champagne fermented in the bottle in this country which took 4 years, or, indeed, more than 2 years. "People who have been working for those men, at the head of their cellars, have informed me that it took on an average a year and a half." Mr. Ripen thinks that about one-third of the champagne made in the United States is fermented in the bottle and two-thirds is carbonated. (572, 573.)

Mr. Ripen asserts that his artificially carbonated champagne is more wholesome than champagne fermented in the bottle. The wine is clean and pure when he buys it, and it is already aged. Champagne which is fermented in the bottle is made from new wine, and Mr. Ripen believes that the carbonic-acid gas which is formed by the fermentation contains from 5 to 10 per cent of impurities, consisting of ethers and injurious gases. He asserts that "chemists and physicians indorse champagne made by the modern process and declare it far purer than that made in the old and crude way." The man who drinks the natural champagne at night will arise in the morning with a "big head" on him; if he drinks the carbonated champagne he will get up in the morning all right. (569, 570, 579.)

Mr. MINOR, a maker and importer of carbonic-acid gas, states that the gas for carbonating champagne is not obtained by manufacture, but by collection. There is only one place in this country where natural carbonic-acid gas appears in such quantities as to make its collection and sale a commercial possibility. That is at Saratoga. The gas which Mr. Minor sells to Mr. Ripen and other producers of carbonated champagne comes from Germany, from the district in which the Apollinaris and other famous German springs are situated. In that district water accompanied by carbonic-acid gas rises from a very great depth—a depth so great that there is no danger of mixture with surface gases arising from the decomposition of organic material. The water is subjected to very great pressure in the earth, and is heavily charged by nature with the gas. As it reaches the surface the excess of gas escapes, and is carefully dried and collected in a gasometer. This gas is as nearly chemically pure as it can be made. Mr. Minor declares that he does not know of any article made on so large a scale in which so high a degree of purity is reached as is shown by the analysis of this gas. It is shipped to the United States in steel cylinders, under a pressure of a thousand pounds to the square inch.

Mr. Minor is also familiar with the manufacture of carbonic-acid gas. He does not sell the manufactured gas to the wine people, but to bottlers of soda water, etc. Even in the manufacture of gas sulphuric acid is not commonly used. There are not over 2 firms in the United States out of 12 with whose processes he is familiar who use it. If a trace of the sulphuric acid were permitted to get into the gas it would work great injury by gradually destroying the steel cylinder in which the gas is compressed. (573-576.)

Mr. Minor asserts that artificially carbonated wine is much more wholesome than champagne fermented in the bottle. If fermentation is carried to such a point that all the sugar is decomposed, it is found that the alcohol and carbonic-acid gas produced do not represent the amount of sugar which was originally present. There appears a loss of about 5 per cent. It has not yet been determined to a certainty what becomes of this 5 per cent of sugar. It is known, however, that secondary-decomposition products are formed, among which are traces of glycerin and succinic acid. If champagne is fermented in the bottle the secondary-decomposition products have no opportunity to escape. The physiological effect of champagne in excess is out of proportion to the amount of alcohol contained in the wine. The effects are more decided and more unwholesome than those produced by too much consumption of artificially carbonated champagne. The only difference that we know of between the two is that the products of secondary decomposition have been retained in the naturally fermented champagne. (574, 575.)

Mr. WERNER, a maker of artificially carbonated wine, says that his wine comes from Sonoma County, Cal. He receives it when it is 3 or 4 years old. He keeps it in cellars from 6 months to a year, that the sediment may be entirely precipitated. Then it is filtered so that it is absolutely pure. It is then carbonated with carbonic-acid gas from Oberlahnstein, Germany, the same gas with which Apollinaris water is carbonated. It is the natural gas which comes from the ground with the water. (576, 577.)

3. Comparative tests.—Dr. WILEY made an examination of 9 champagnes bought in the market. One was an artificially carbonated wine; the others were champagne fermented in the bottle, partly of European and partly of American production. All were kept at a temperature of 62° for 5 hours in order to determine the rate of effervescence. In all the effervescence continued during this time, and there was very little difference between the different samples; the

bubbles from the artificially carbonated wine were larger in size and less evenly distributed than from the others. After standing over night the artificially carbonated sample had a bad odor, and the others were pleasant to the smell. The American wines had a richer and nuttier flavor than the foreign. On chemical examination it was found that the natural American champagne corresponded very nearly in composition to the standard European varieties. The artificial champagne contained much less alcohol than the natural champagne, and a considerable quantity of cane sugar had been added to it. (589, 590.)

Mr. HARRISON, sergeant-at-arms of the Senatorial Committee on Pure Foods, reports the result of a comparative examination of certain champagnes, 5 of which were imported, 5 American wines fermented in the bottle, and 4 American carbonated wines. All were first placed for 2½ hours in a refrigerator in which the air had a temperature of 35°. All were then placed on a steam radiator, where the thermometer at the close of the test registered 98°. Under these circumstances the average period of effervescence of the carbonated wines was 6 minutes 45 seconds; of the French champagnes, 43 minutes 24 seconds; of the American natural champagne, 47 minutes 48 seconds. (591, 592.)

C. Labels.—1. Still wine.—Mr. EMERSON, president of the Brotherhood Wine Company, says that a very large proportion of American still wine is sold under foreign labels, with the clear intent to deceive the public. The best of the American wines are now sold as foreign wines in our market. (507.)

Mr. EITEL, an importer of wine and beer, declares that the small wholesale houses sell wine under false labels. The retailer can not put an adulterant into bottled goods, though he could into casks. (290, 291.)

Dr. WILEY says that one of his assistants visited the custom-houses and the large importers to obtain samples of beverages imported into this country from Germany. The importers were visited incognito. At one place where the assistant applied for claret, the seller asked what label he should put on it. The marking of wines with false brands is very much in vogue, and extremely reprehensible. California producers have adopted foreign names in some cases, so that Liebfraumilch, Johannisberger, and Rudesheimer can be bought in the Sonoma Valley. The labels are not foreign, and the names of the vineyards are given, but the wines are named after well-known foreign varieties. It seems to Dr. Wiley that the word "California" or some other distinguishing name should be used. Sherry, port, and Moselle wines are also made in California and called by these names, to which there would be no objection if their California origin were also stated. The witness has never gone to a dealer in this country who would not tell him exactly where his wines were made and put up if asked, but people do not take that trouble. It is easy to have bottles sprinkled with coal dust to give them the appearance of having been in the cellar for years, and the witness has seen fresh-looking dust, as though put on for the occasion. (40, 41.)

Mr. HILDRETH, president of the Urbana Wine Company, says that his company makes brands of wine for two or three different people, but they are labeled for those customers and labeled as American wines. No deception is involved. The company does not now take new customers of this kind, because it wishes to establish its own brand and label. It does not make any foreign label or imitate any foreign or domestic wine. (510.)

2. Champagne.—Mr. WHEELER says that he has never seen a bottle of the so-called champagne which is produced by artificial carbonation, marked in a way which would indicate the method of manufacture. It is labeled champagne, and the consumer buys it for a true champagne and pays the highest price. The jobber and the grocer may understand what it really is, but the grocer does not tell the consumer. The retailer is largely to blame for the fraud. "He will sell it for \$11 or \$12 or \$13 a case until the consumer gets on to it, and then the seller or retailer will sell the same wine for \$6 or \$7, or even \$5 a case." But these so-called champagnes hardly ever bear a label which tells where they were made. They are generally marked to look as if they came from France or Italy. Mr. Wheeler knows of only two makers who put their names on goods of this kind. A connoisseur can detect the character of these artificially prepared wines by the taste, but most people who drink wines are not connoisseurs. The makers of true American champagne label their goods with their own names and with the place of production. Their goods are marked champagne and are champagne. (521, 523.)

Mr. WERNER, a maker of carbonated champagne, says that his firm uses no foreign labels, but puts its own name on its bottles. (577.)

Mr. RIPEN, a manufacturer of carbonated champagne, says that his firm puts its own name—Ripen & Co.—on its bottles. He believes that some makers of carbonated wine put it up under fictitious labels. A great deal of champagne sold in this country is carbonated in Europe and labeled as if fermented in the bottle. The witness believes the majority of imported champagne to be the nat-

urally fermented wine, but some of it is carbonated and falsely labeled with such names as Mumm and Krug. A majority of the American champagne makers use labels which contain French words, apparently to give the impression that they are foreign. (572, 573, 577.)

D. Legislation.—1. State.—Mr. BAUDER says that New York has a law which expressly forbids artificial treatment of wine with carbonic-acid gas. The law has not been enforced. It is defective in not making it the duty of any officer to enforce it. But when he and others interested in the manufacture of genuine champagne considered the matter of attempting to enforce the law they concluded that it was not worth while, as it would only drive the fraudulent manufacturers into New Jersey. Wine shipped from other States could not be effectively dealt with by the law, as analysis would not show such a sophistication as artificial treatment with carbonic acid gas. (516.)

Mr. Bauder says that Ohio has a very stringent pure-food law, and that when it was first enacted his company was obliged to stamp the word "compounded" on the labels of its champagne, for shipment into Ohio, because, like all champagne, it contains a little rock candy. He almost made up his mind to refuse all orders from Ohio rather than put that word upon the label. But the rigid enforcement of the law seems to have been abandoned. (517, 518.)

Mr. EMERSON says that a State law is of no effect outside of the territory of the State, and does not restrict the shipping into the State of almost any kind of goods. It would be very difficult to prove that wines shipped in from another State had been fraudulently labeled. No analysis would show it. It would be necessary to get at the derivation of the wine. (508.)

2. National, proposed.—Mr. HILDRETH says the trouble with such local laws as that of New York governing the purity of wines is that they can not be enforced. The New York pure-food law is very poorly enforced. There ought to be a general law compelling people to sell their products for what they actually are. (514.)

Mr. EMERSON thinks that there ought to be a national law to compel people to show by their labels what is in their bottles. Every bottle ought also to be labeled with its true place of origin. If American wine makers put their own names upon their labels instead of foreign names, such adulteration as may now take place would be diminished, though adulteration is not now a serious trouble. (507.)

Dr. WILEY says that imported wine should come with a certificate from the Government where it is made. If genuine, there should be no objection to the process of manufacture being known. (54.)

3. Use of generic names defended.—Mr. HOCHSTADTER says that every manufacturer should be compelled to put his own name on the liquor that he puts up, and there should be a heavy penalty for the use of any other name; but when a name has become generic, so that it designates a kind of goods, the "foreigner has a right to those names only until the American has become acquainted with the process of manufacture."

Mr. Hochstader submitted to the committee a brief by Mr. Israel F. Fischer, which had been presented before the commission to revise the patent and trademark laws, in protest against the adoption of any statute which should deprive American manufacturers of the right to describe their products by such words as "Port," "Madeira," "Burgundy," etc. Mr. Fischer asserts that such names of wines and liquors have come to be descriptive names of products, which may properly be applied to such products wherever they originate. They should be treated in the same way as the names of Brussels and Axminster carpets, Russia and Morocco leather, Cashmere and Tweed cloths, French mustard and confections, Dresden china, Dutch metal, and German silver. All these names originally indicated origin, but they have ceased to indicate origin and have come to denote certain kinds of goods. The American wine growers have secured the Malaga, Muscatel, Tokay, and other varieties of grapes, have planted them here, and have succeeded in producing the very finest qualities of wine and brandy. Buyers of champagne know that the word designates simply a sparkling wine; buyers of port, that it means a dark, rich, heavy wine, made by the same process which is used in Portugal. No deception is involved. No other means are open to the American producer of designating to consumers the character of his goods. The purchaser would not know what to ask for if he could not use the familiar title. The American producer claims that his wines are as good as the foreign, and in many cases better. (469-472.)

4. Carbonated champagne.—Mr. COOK thinks that a law which should compel makers of artificially carbonated wines to state the true character of their products upon their labels, instead of marking them "champagne," would be beneficial to the public, as well as to the makers of genuine sparkling wine. (520.)

Mr. HILDRETH desires a law to compel the labeling of every wine with its actual character. His business is particularly interfered with by the sale of artificially

carbonated wine under the name of champagne. Anybody who wants that kind of wine ought to have it, but it ought to be labeled, so that buyers may know what they are getting. (512.)

Mr. EMERSON desires that producers of carbonated wines be compelled to state on their labels what the bottles contain—whether carbonated champagne or genuine champagne; although, he adds, there is no carbonated champagne really. (503.)

Mr. WHEELER says the makers of true American champagne have no desire to prohibit the making of artificially carbonated wines, but they do want a law which will compel the selling of those wines under their true names and the labeling of them in a way which will indicate their true character. (522.)

Mr. RIPEN would not like to mark his bottles "Carbonated wine," or anything of that sort, lest people should "think it was some medicated stuff." If the carbonated goods were compelled to be marked in this way, and the users of the old process had to mark their wines "Fermented in the bottle," the effect would probably be to injure both kinds of American champagne, and to turn the trade toward the foreign brands. (578.)

Mr. WERNER would object to being compelled by law to mark his wine "Artificially carbonated," because the use of the word "artificial" would lead people to think it an artificial article. "Carbonated wine" would be sufficient. (579.)

X. DISTILLED LIQUORS.

A. Ingredients, distillation, and aging.—Dr. WILEY says the natural way of making whisky is by fermentation of grain, rye and Indian corn being the two great sources of our whiskies. After fermentation is completed the mass is subjected to distillation. The product consists of water, common or ethyl alcohol, a series of alcohols known as fusel oil, and, finally, essential oils and ethers. Fusel oil is a term applied to a mixture of alcohols which have a higher boiling point and a more oily consistency than common alcohol. It contains amyl alcohol, butyl alcohol, and various other alcohols. All these distillations contain essential oils, which give the flavor and odor. Crude alcohols distilled in this way are not suitable for drinking. The product is raw whisky, colorless and unpleasant to the taste; hence to make a beverage of it it must be treated so as to improve the taste, and this is called aging. It is put into casks of oak, usually slightly burnt or charred inside. The raw whisky extracts from the wood a little tannin and coloring matter. It is then placed under the influence of oxygen, and the alcohols, under the influence of ferments, begin to oxidize, forming ethers. Alcohol of any kind when oxidized produces an ether. Ethyl alcohol forms sulphuric ether, which produces anesthesia; amyl alcohol forms a different ether, butyl alcohol still another. These ethers are all volatile, producing a pleasant aroma. By oxidation they remove the bad taste and poisonous alcohols from the mixture, so that after several years, instead of an irritating mixture, bad to the taste and smell, there is one which has a delightful odor and taste and is soothing—a whisky fit to drink. (54, 55.)

Dr. Wiley says brandy is obtained by distilling wine or fermented grape juice. The pomace left after the expression of the juice has a quantity of grape sugar and the tannic and other qualities peculiar to the grape. When mixed with water and fermented it forms a low-grade wine, which is subjected to distillation, brandy being the product. Genuine brandy has to be aged as whisky is to get the proper flavor and aroma from the alcohols. (56.)

B. Artificial aging of whisky and brandy.—Dr. WILEY says the manufacture of compound or artificial whisky has for its purpose the avoiding of the long and expensive process of aging. The makers begin with a pure spirit made in a few hours by rectifying the high wines of the distillery, the object being to get rid of all the other alcohols and leave only the pure ethyl alcohol. Cologne spirits is one of the trade names for the finest variety of this product. The blending begins with this high-grade alcohol—about 96 per cent alcohol and 4 per cent water. Enough water is added to dilute it to the strength of whisky—about 45 per cent; thus the volume is doubled or more at the start. The next step is to color it brown or reddish. This is done by adding burnt sugar or caramel. The flavorings due to the oxidation of various alcohols are easily made in the chemical laboratory, by oxidizing amyl alcohol and butyl alcohol. (See House Report No. 2601, Fifty-second Congress, second session, pp. 67-74.) Thus in two or three hours a skillful compounder can make a material which looks like, smells like, tastes like, and analyzes like genuine whisky, but has a different effect upon the system. It is more apt to injure the user than the genuine article. The witness can not say that any of the materials used are unwholesome in moderate quantities, being chemically the same as those produced by the natural method

of aging, but there is something lacking. The substitution of artificial for natural products impairs the quality, and there is a difference in effect which the chemical laboratory fails to distinguish. The injury to health produced by a little excess in the use of alcoholic liquors is very much accentuated when these artificial drinks are employed. The witness would class this practice under both forms of adulteration—as a fraud, and also as injurious to health, without being able to point out any particular thing that causes the injury. (55, 56.)

Dr. Wiley says there is no way to tell with ease or definitely which samples of whisky are genuine and which are not. It is a rare thing that nothing but pure articles are placed on the market. He has been told that whiskies are generally about two-thirds genuine and one-third mixed. The chemist is therefore at a loss. (54.)

Dr. Wiley has been told by a well-informed gentleman that considerably more than half of the whisky in this country is compounded whisky. A little old whisky is usually mixed with it, but it is often sold as it is—whisky that has no claim to be called whisky and brandy which has never been in contact with the grape. Compounded brandy is made exactly as compounded whisky is. The essence dealer will sell brandy essence or whisky essence; the fraud is the same in both cases. This compounding is not peculiar to this country. Compounded brandy is made in Europe, and the total quantity produced is far in excess of the quantity derived from fermented and distilled grape juice. There is nothing to prevent the importation of these brandies into this country.

Dr. Wiley says nothing against the business of chemical manufacture of whisky and brandy essences and ethers, but considers it a legitimate business. Some perfectly honest, upright gentlemen are engaged in the business, and they do not want these things to get out of their hands to be used for fraudulent purposes. These same manufacturers make the flavoring extracts for soda water. (56, 57.)

Professor CHITTENDEN doubts whether chemical analysis alone will always detect a "made" whisky. He thinks it questionable whether an artificial whisky made by essences is as wholesome as a natural whisky made by aging, but he can not answer definitely, because he has no direct knowledge of the effect of some of these essences on the body. (424.)

Mr. O'REILLY, editor of the Liquor Trades Gazette, complains of the selling of new whiskies as fully matured. He does not think any substance deleterious to health is used in the artificial aging of whisky, except possibly for coloring, to imitate the dark color produced by natural aging. For that purpose prune juice is often used; this is not believed to be injurious to health. But even if no injurious substances are used, the selling of new whisky for old is not fair to the honest manufacturer. (461.)

C. Adulteration, blending, and fabrication of whisky.—1. *Water and tannin*.—Professor CHITTENDEN states that in all the various liquors which he has analyzed in the last five years he has found no well-defined adulteration except the addition of water to whisky. This adulteration seems to be common in some of the lowest grades of saloons. He also found tannin in some of the whiskies which contained a large proportion of water, but whether that was the result of adulteration or of the presence of the product for a long time in bad casks he could not tell. (428.)

2. *Bottling whisky in bond—alleged failure of law*.—Mr. O'REILLY says that there is a United States law under which liquors are bottled in bond, and goods "bottled under that law bear a Government stamp and are 100 proof, absolutely without any adulteration." Mr. O'Reilly thinks that this law is a failure. Very little such liquor is sold at New York, because the people there "do not fancy liquor that is under proof; they prefer something that is about 85 or 90, and in this market there is a preference for blended whisky, consisting of the product of several distilleries blended together." (462.)

3. *Liquors without distillation*.—Mr. O'REILLY submitted a book called "A Treatise on How to Make Liquors without Distillation." Formulas for the manufacture of Scotch whisky from rectified spirits and for the production of a bead upon liquor by the addition of sweet oil and sulphuric acid were read from it. (463.)

D. False labels.—Mr. SADLER, editor of Bonfort's Wine and Spirit Circular, believes that of all the leading brands of imported spirits as they are sold in this country more are spurious than are genuine. The falsification has been greater than ever since the rate of duty has been made very high. The fraudulent spirits are very largely the product of illicit stills, from which the Government derives no revenue whatever. The spirits are put up under counterfeit labels, either facsimiles or such imitations as will deceive the unwary buyer. Sometimes genuine imported bottles are refilled. This is extensively done in saloons where wines and spirits are sold by the drink. In fact, there are comparatively few places

which do not do it. While imported goods, such as Scotch whiskies, brandies, and wines, which have an established reputation, are the greatest sufferers, the practice is not confined to imported goods.

Mr. Sadler believes that, on the assumption that no tax is paid on the spirits thus fraudulently sold under the names of imported brands, the Government lost \$6,000,000 a year, which it would receive if the liquors which are sold as imported were actually imported and paid the duty. It is true that a great deal of spirits is sold in this way on which internal-revenue taxes have been paid; in that case the Government loses the difference between the internal-revenue tax and the import duty. (396-398.)

Mr. HOCHSTADTER declares that the statement of Mr. Sadler that \$6,000,000 annually is lost to the Government by reason of the imitation of labels by liquor dealers in this country can not be substantiated. (467.)

Mr. CRILLY declares that it is generally believed that Mr. Sadler's estimate of a loss of \$6,000,000 per annum to the Government by the refilling of imported bottles and the imitation of foreign labels is an underestimate. (473.)

Mr. O'REILLY presented 33 samples of fraudulent labels, all made in imitation of the labels of one brand of whisky. The proprietors of this brand have been particularly active in prosecuting such frauds. Aside from legal measures, they have resorted to methods of publicity. When they have found a man in a certain town imitating their whisky they have posted large placards informing the public of the fraud. (465.)

E. Proposed label laws.—Dr. WILEY would not favor the prohibition of the manufacture of compounded brandies and whiskies, but would favor a bill requiring them to be plainly marked and stamped by the Government when it stamps the alcohol content. He has been told by a well-informed man that these compounded whiskies do not usually go into the bonded warehouses, but are made and sold directly to the trade. When they are stamped in the first instance with a Government stamp the Government officials could easily see that they are stamped what they really are. Dr. Wiley says that some perfectly honest gentlemen engaged in the manufacture of whisky and brandy essences are as much in favor of the proposed law as he is. They do not want these things to get out of their hands, to be used for fraudulent purposes. They do not like to be parties to crimes; they are anxious that their products should continue under their own names until they reach the consumer. (57.)

Mr. SADLER would have Congress enact that any person who sells, or keeps on hand for sale, foreign or domestic wines or liquors under any name other than the proper name or brand known to the trade shall be subject to fine and imprisonment. (397.)

Mr. O'REILLY, editor of the Liquor Trades Gazette, suggests that in the case of whisky a man need not stamp his entire formula upon the package, as that might involve the revelation of proper trade secrets, but that a reasonable percentage of its ingredients should be named upon the label of every package. (461, 462.)

F. Cordials.—*1. Processes of manufacture.*—Mr. RHEINSTROM, a distiller of cordials or liqueurs, states that his goods are produced by distillation from herbs, fruits, and cologne spirits, which is a refined or redistilled alcohol, supposed to be free from fusel. His products are self-preserved. Some of his competitors produce goods of similar appearance, without distillation, by the cold process, by the addition of essences. Such goods have to be preserved with antiseptics. (427.)

2. Spurious foreign brands.—Mr. O'REILLY testifies that he knows of only one American house which puts up liqueurs and cordials under its own name. A large quantity of these goods is manufactured in the country, but all except the products of this one establishment are put up under foreign names. This is a fraud upon the consumer and it lessens the Government revenue by diminishing imports. (464.)

3. Proposed legislation.—Mr. RHEINSTROM considers that the practice of selling goods as distilled which are not distilled, selling goods as made from herbs and fruits which are not made so, selling as pure goods those which contain unwholesome antiseptics, should be stopped by law. (427.)

G. Alcohol in general.—*1. Effect on digestion.*—Professor CHITTENDEN says that in the living stomach a certain quantity of alcohol increases the flow of the gastric juices, and, though it retards the solvent action, it does not appear, in small quantities, to retard digestion on the whole, but rather appears to stimulate it. Similarly, an after-dinner cup of coffee increases the peristaltic movement of the intestine, and in that way increases the rate of digestion. It does not materially increase or decrease the rate of solvent action. So common salt, in small amount, tends to increase the rate of digestion, while a larger quantity retards it. Alcohol,

and other agents as well, taken in large quantities, produce an inflammation of the mucous membrane of the stomach. (420, 421.)

2. Percentages in various liquors.—Dr. WILEY says wines contain from 8 to 22 per cent alcohol, light claret having only about 10 or 12 per cent, port and champagne from 16 to 24 per cent. It is rare for wine to have more than 24 or 25 per cent alcohol, and most have only about 12 per cent. Beers have from 3 to 6 per cent alcohol, and ales, porters, and stouts from 4 to 8 per cent. Distilled liquors have from 40 to 50 per cent alcohol. Rums and gins, etc., run very much higher in alcohol than beers and wines. (54.)

XI. FLAVORING EXTRACTS AND SODA-WATER SIRUPS.

A. Flavoring extracts generally.—Dr. WILEY says that many of the flavoring extracts, such as lemon extracts, used for flavoring food and for flavoring soda water are artificial compositions. (585.)

Professor VAUGHAN says most of the flavoring extracts are artificial, being made from butyric ether and other chemically prepared ethers. He strongly condemns the use of wood alcohol in making these extracts, saying it is poisonous even when pure, and as ordinarily used is a very poisonous substance. (204, 205.)

B. Lemon extracts.—Professor MITCHELL, chemist to the Wisconsin dairy and food commission, says that according to the Pharmacopoeia lemon extract, or spirits of lemon, should contain at least 5 per cent pure oil of lemon peel dissolved in deodorized stronger alcohol and colored with lemon peel. Formerly one ounce of oil in a pound of extract was required, and many of the older druggists manufacture a stronger extract than that required by the Pharmacopoeia; the higher-priced extracts contain oil of lemon up to 8 per cent. When the Wisconsin law took effect many of the lemon extracts on the market contained so little oil that when put into water they did not even cloud it. They had just a little of the aroma of lemon, and were highly colored with aniline colors. Stronger alcohol was not used in these extracts, most of the expense of making them being in the alcohol. The alcohol strength ran down from 93 and 94 per cent, which it should be, as low as 18 and 12 per cent in exceptional cases. Oil extracted from ribbon grass grown in the East India islands, which has a rank lemon flavor, was used to flavor these extracts, making them smell quite like lemon extract and taste a little like lemon. Citral obtained from ribbon grass was also added. The chief extracts on the market contained less than one-tenth of 1 per cent of oil of lemon, or one-fiftieth of the amount they should have. (127-129.)

C. Vanilla substitutes.—According to Professor MITCHELL, the Pharmacopoeia requires vanilla extract to be made with 10 per cent of vanilla beans, and alcohol and water, without coloring matter. This would make quite an expensive extract and a very strong one. Vanilla extracts are very hard to control. There are many substitutes for vanilla which in themselves are good flavoring substitutes, but much cheaper, much inferior, and perhaps somewhat injurious. The natural flavor in the vanilla bean is largely due to a crystalline substance called vanillin, which can be made artificially. It was first made from a layer between the bark and the wood of the willow, and is made from similar sappy layers in other trees. Finally, processes were found for making it from oil of cloves, the eugenol of which can be readily converted into this substance. Vanilla beans have other substances that lend form and body, but vanillin is a valuable flavoring substance in itself. The tonka bean is also used as a substitute. This is a very aromatic brown bean, formerly used for flavoring and scenting snuff, and gives a strong flavoring substance. Its flavor is due largely to cumarin, which is also made artificially from coal tar products. Cumarin causes dizziness and headache, and has marked poisonous effects when used in large quantities. Almost all the cheaper grades of vanilla extracts contain cumarin, either natural or artificial. They are almost all colored, sometimes with brown sugar. After the Wisconsin officers became able to detect the caramel color readily, the manufacturers had to get a coloring matter harder to detect, and began to use prune juice. (129, 131.)

Professor Mitchell thinks vanilla substitutes should not be sold as the genuine article, but are permissible if they can be controlled. (119.)

D. Soda-water sirups.—Professor MITCHELL says sirups used in soda fountains are mixtures of various chemical ethers with sirup, generally colored. They are not made from fruit except in a few instances. The Wisconsin officials have ruled that where a fruit flavor could be made from the substance itself, as lemon or vanilla, they would not permit the artificial; but where an extract from the substance itself could not be commercially made which would produce the characteristic flavor or aroma, as in the case of strawberry, banana, or pineapple, they have permitted the sale of the artificial. (134.)

Dr. WILEY says the flavoring extracts for soda water—apple, peach, and banana—are made by the same manufacturers who make whisky and brandy essences. Chemists having found out that these flavors are due to the presence of ethers which are cheaply made, the flavor of apple or peach is easily produced by fermentation and oxidization of the resulting alcohol. The flavor of the banana is one of the most abundant of synthetic ethers, amyl acetate, made of amyl alcohol, the most abundant alcohol in fusel oil. When a bottle of this substance is opened in a room the whole place will seem to be stocked with bananas. Almost every flavor nature produces, including even musk, has been imitated in a chemical laboratory. These flavors are sold for flavoring extracts and other purposes. It is unusual to get a pure fruit flavor at a soda fountain; the chances are 5 to 1 that a customer will get one of these ethers colored to imitate pure fruit flavor. They are much more convenient and cheaper to handle. They do not ferment and will keep forever. They are not injurious to health in minute quantities, but are not as good as the pure fruit, which adds to the flavor, although the real essence which gives the flavor is the same in both. The artificial essence, to Dr. Wiley's taste, is flat and not palatable. (57, 58, 585.)

Mr. JACKSON, a representative of the Association of Fruit Growers and Fruit Dealers, says that he has collected some 400 samples of pretended fruit sirups, and has had many of them analyzed, with astonishing results. Under the new law of New York, which prohibits the selling or giving of compounds with false representations as to their composition, some 48 arrests have recently been made. In many cases Mr. Jackson has found a cheap grade of oil of lemon mixed with tartaric acid. He has found such goods even in many drug stores. A compound which was sold for pure lemon juice was offered, according to Mr. Jackson, at 5 gallons for 20 cents, although it would take almost 5 boxes of lemons at \$3 a box to make such a quantity of genuine juice. The fraudulent sales of the maker of this particular compound have been stopped by the threat of proceedings under the law. Some of the soda sirups are dyed with aniline. Such practices are a fraud upon the purchaser and are injurious to the growers of fruit and the dealers in it. The fruit men do not want to drive anybody out of business, but they want things to be properly marked. They want everybody who manufactures sirups to be compelled to show the real contents of every bottle on its label. (473-475.)

Mr. DUFF has found soda-water sirups in which the sweetening was produced by saccharin and not sugar, and the color by aniline dyes. He did not find enough dye to be injurious to health if one glass of soda water were taken; but he would not say what might not result from the continuous use of such materials. (498.)

Professor JENKINS says temperance drinks are extensively colored with aniline dyes and flavored with artificial flavors. He has found dye enough in one glass of soda water to dye a piece of flannel 4 inches square a very brilliant aniline color. (453.)

Mr. WILLIAM S. EDWARDS, a dealer in mineral water, has found that a great many substances said to be poisonous are used in coloring soda-water sirups. (288.)

E. Artificial mineral waters.—Mr. MINOR, a dealer in carbonic-acid gas, asserts that it is the common opinion among the best physicians of New York that artificial mineral water, when the composition is known, is better than a natural water, as to which you do not know what you are getting from time to time. The carbonic-acid gas with which artificial waters are charged is not commonly made by the use of sulphuric acid. Not more than 2 makers use it out of 12 with whose processes Mr. Minor is familiar. Some manufacturers of mineral water manufacture their own carbonic acid from adulomite. (575, 576.)

XII. COLORING MATERIALS.

A. In general.—Dr. WILEY says a cook who understands his business seeks to produce not only a palatable dish, but one which will appeal to the senses through the eye. This has a physiological importance, the sight of food in attractive colors starting the flow of digestive juices, so that the digestion is speedier and more perfect. As many foods in the course of preservation tend to lose their natural colors, the manufacturers seek to restore or preserve them, especially in the case of green goods, such as peas, beans, cucumbers, etc., the green of which is fixed by chemicals; otherwise the chlorophyll would turn to xanthophyll, and the product would lose its appetizing appearance, becoming yellow or tawny. The substances used for fixing chlorophyll are poisonous, being principally zinc and copper compounds, but the amount necessary is very small, and most healthy stomachs would suffer no discomfiture from the ordinary quantity. With many people, however, the least possible amount upsets the digestion, so that if these materials are present, this fact should be stamped on the package. (42.)

Professor VAUGHAN sees no reason why certain coloring matters should not be used to improve the appearance of food, which has some effect upon its digestibility, but he says the general object of coloring matter is to enable the seller to sell an inferior grade in place of a higher grade. (203.)

Mr. ALLEN MURRAY, a drug and spice miller, does not think there is anything in his drug department that goes into food, unless it is a little harmless prutzeneil that ladies buy to make colored cake. (70.)

Professor PRESCOTT says copper green or copper sulphate is used quite largely in pickles and in peas, and other vegetables, acting as much or more as a mordant than as a direct coloring agent. (199.)

Dr. PIFFARD says he has met with creme de menthe colored with methyl green. It was not made from mint, but was probably a mixture of methyl and sugar, wood alcohol, and methyl green. He does not know that this is injurious, but the consumer should be protected in getting what he orders, (192.)

B. In butter and oleomargarine (see also *Oleomargarine*, p. —).—Mr. DELAFONTAINE, of Chicago, a chemist, says that until comparatively lately annatto was extensively used in butter and imitations of butter, but that recently he has examined samples of butter and butterine the coloring matter of which was not annatto, but was one of the aniline or coal-tar colors, some of which are very poisonous, or a derivative from them. (229.)

Professor VAUGHAN sees no reason why butter should not be colored with annatto. We demand June butter all the year round. Annatto is a vegetable coloring matter formerly used a great deal, but the azo compounds, which are aniline colors, are now used almost exclusively because they give a more permanent color. He thinks there would be no objection to the coloring of oleomargarine with harmless coloring matter not interfering with digestibility if it were still sold as oleomargarine. He has never found any poisonous matters in sufficient quantity to act in butter or oleomargarine, and is positive that the aniline colors used in butter and oleomargarine are not at all harmful as they are used. He thinks their use might be permitted within certain limits. (203.)

Professor PRESCOTT says coloring matter is used largely in butter and oleomargarine. In oleomargarine coal-tar colors are used, chiefly the colors called azo dyes, which have been declared to be poisonous. Professor Prescott believes them objectionable in food, at least until it shall be known which of them are harmless. He believes that any coloring matter which tends to deceive the consumer as to an article of food he is buying is also indirectly injurious. The objection to coloring matter applies in a lesser degree as between winter and summer butter, because the difference is not nearly so great as between butter and oleomargarine. In analyzing butter colors he has found them to be some preparation of annatto, which is not objectionable, but he would not be surprised if some of the ordinary butter colors now in use contained coal-tar colors. The color of azo dyes is more permanent than that of annatto. (198, 199.)

Mr. H. C. ADAMS says there are two kinds of coloring matter on the market—annatto and aniline. The latter have come into more general use of late because of the permanence of the color. They are unquestionably poisonous to a greater or less degree. In Wisconsin a child was killed by drinking a comparatively small amount—1 or 2 teaspoonfuls—of one of these coloring matters. (209.)

Dr. WILEY says annatto has gone practically out of use. A member of a firm which formerly made it exclusively has told him that they have almost absolutely stopped making it, and that there is no demand for it either from butter makers or from oleomargarine makers. (223.)

Mr. PIRRUNG says the color used in his oleomargarine is a pure vegetable color made from the annatto bean; no chemical dyes are used. (315.)

Mr. STERNE declares there is not an atom of aniline dye used in the oleomargarine business. (223.)

C. In confectionery.—Dr. WILEY says the use of an innocuous coloring matter in confectionery is very important. The coloring in confectionery appeals to the individual's taste, and the manufacturers have studied the aesthetic part and obtained some of the most pleasing tints. Occasionally poisonous colors have been used, but since publicity was first given to the matter this evil has been mitigated, and the witness doubts if a single poisonous material can be found in use at the present time. Aniline dyes or harmless vegetable substances are used instead. There is no necessity for using poisonous dyes, because the desired tints can be obtained with perfectly harmless ones, and the difference in cost is very minute. Mineral coloring has been almost tabooed. Chromate of lead, formerly employed to give the yellow tint, has gone out of use. Of about 100 kinds of colored confectionery examined by the witness only 2 were found to contain mineral coloring matters, all the rest being of animal or vegetable origin, and not

poisonous. He thinks very few of the coloring matters used will prove injurious in small quantities. (30, 31.)

D. Aniline colors. (See also *Soda-water sirups*, p. —.)—Professor MITCHELL says aniline coloring matters are made of aniline oil, a chemical obtained from coal tar, which takes many hues. Aniline first came into importance through the production of a red coloring matter, magenta. (115.)

Mr. DELAFONTAINE says the use of coal-tar coloring matters seems to be taking the place of vegetable coloring matters, not only in butterine and butter, but in confectionery, and for red and yellow colors in jellies and preserves. (229.)

Mr. BILLINGS says very few of the aniline dyes are used medicinally. Some of them, as methylene blue, can usually be taken with impunity; others, as vermillion red, are said to produce somewhat poisonous effects from the essential aniline. Aniline is an oily fluid from which the colors are made. Dr. Billings would not recommend the use of aniline dyes in confectionery or in food. (249.)

Dr. PIFFARD says aniline dyes are used in connection with butter and wines. In France they were formerly used to a considerable extent, but were found to be distinctly injurious, and their use has been corrected in great measure by legislation. Some of the aniline colors contain arsenic as an accidental impurity; it has been found in that class of aniline known as rose aniline, magenta, fuchsin, etc. Aniline coloring matters have not been sufficiently investigated by chemists and physiologists. (191, 192.)

Mr. HELLER says the color used for sausage is aniline dye. There are different kinds of aniline dyes; some are poisonous because made by an arsenic process, and some are perfectly harmless. The imported aniline dye used by Heller & Co. is guaranteed by the manufacturers perfectly harmless. Aniline dyes are used in a good many food products; they make them look more appetizing. The coloring matters for meat contain salt. (180, 181.)

Professor MITCHELL says the better grades of colors, which are guaranteed free from arsenic, generally are not made by the arsenic process. (181.)

E. Proposed legislation.—Professor PRESCOTT would advise that the use of coloring matters be prohibited or declared on the label. He would not undertake to say that it should be prohibited in all cases. Some European governments have issued lists of colors which the law would permit as being harmless. With regard to confectionery he thinks this very wise. (199, 200.)

Dr. PIFFARD sees no objection to the coloring of food products if the genuine ingredients are stated. Mustard mixed with a certain portion of carbohydrate is not objectionable if it is so stated. The English have had a great deal of trouble over the question whether the artificial coloring of mustard should be permitted. (188.)

Professor MITCHELL thinks that where coloring matter covers up imitations or conceals impurity in food it ought to be ruled out, and adds that perhaps it might be better to rule out coloring matters entirely. (120.)

Dr. BILLINGS would like to see the use of aniline colors prohibited in the manufacturing of candies. (249.)

Dr. WILEY thinks the National Confectioners' Association will be ready to aid in securing a law prohibiting the use of injurious coloring materials. (31.)

Professor VAUGHAN thinks the Government should specify the coloring matters which may be used in butters and butter substitutes. (208.)

Professor CHITTENDEN says that the use of copper and zinc colors to give vegetables a green appearance ought to be prohibited. There is no question here of preservation, or of correcting the possible injurious effects of micro-organisms. The only effect is to deceive the eye. (422, 425.)

XIII. PRESERVATIVES.

A. Various preservative agents.—Dr. WILEY enumerates three ways of preserving food products: (1) By sterilization, or the ordinary canning process; (2) by a low temperature, as in cold storage; (3) by the use of chemicals which prevent the action of the decomposing germs. Decay in all organic matters is not produced by oxidization, as formerly supposed, but is due to the working of ferments. Anything which suspends this action or paralyzes the organisms preserves the product. (1) To destroy the organisms sterilization is practiced. If any organic substance be kept for a certain length of time at a sterilizing temperature, like that of boiling water, the organisms are completely killed, but the spores from which they come endure a higher temperature, and after a few days may develop new organisms, so that sterilization is often continued a greater length of time, or successive sterilizations are practiced, the safer way being to sterilize a second time after time has been given to develop new colonies of germs or ferments. It is not necessary to exclude the air from sterilized foods to preserve them, a tuft

of sterilized cotton over the opening being sufficient. (2) By the second method the activity of all germs is lessened as the freezing point is approached, and a temperature is soon reached at which the activity of the ferments is entirely suspended, so that organic matter can be kept indefinitely without decay in cold storage, or in the natural cold of winter. A great many ferments cease their activity before reaching the freezing point, others only at or below the freezing point; but a temperature is easily reached in which all germs are in a state of suspended animation. (2) In the third method the ferments are paralyzed by chemical reagents known as antiseptics. The use of antiseptics which arrest digestion is prohibited in most European States. (48, 44.)

Mr. I. GILES LEWIS, a wholesale druggist, enumerates four general ways of preserving foods: (1) By heat; (2) by cold; (3) by drying; (4) by the addition of some substance. He lays down the general rule that anything which itself enters into the animal economy is a harmless preservative, being absorbed as the food is digested. The ordinary materials for this purpose are alcohol, sugar, salt, and vinegar, salt and certain spices being exceptions to the rule, because they promote the absorption of the food and are really beneficial, though they might be harmful in large quantities. (33, 34.)

Dr. HENRY G. PIFFARD, of New York City, believes that the compounds of salicylic acid, boric acid, borate of sodium, ordinary borax, and formalin are the antiseptic preparations principally used as preservatives. (191.)

Dr. FRANK BILLINGS, professor of the practice of medicine in Rush Medical College, has no doubt that refrigeration is the best process of preserving foods, but it is impossible to carry it out with our present facilities, and there is no question whatever that some preservative must be used. The moment an animal is killed the formation of toxins begins as the result of the beginning of decomposition. Refrigeration may so retard that that not enough is formed to be really poisonous, and yet there will be more or less of the poison in the meat. This is absolutely stopped by a preservative. He thinks there is quite as much danger in refrigeration as there is in a borax preservative. (248, 249.)

B. Injurious effects of antiseptics.—1. Interference with digestion.—Professor MITCHELL, chemist to the Wisconsin dairy and food commission, calls attention to the importance of the rapidly growing use of preservatives and antiseptics. He defines an antiseptic as a substance which will stop the development of a germ or bacterial life. These antiseptics or anti-ferments are used in dairy products, to a considerable extent in candy, and a great deal in chopped meats, such as hamburger steaks and sausages. They are used in bulk oysters, in fish, in the brine of some cured meats, such as hams, and possibly in corned beef. They are recommended by sellers for use in almost every conceivable food that will spoil, and are almost universally recommended as being harmless and impossible of detection by chemists. Professor Mitchell considers any active antiseptic necessarily deleterious to health. It retards the processes of the stomach, stopping the working of the normal enzymes or ferments, and possibly, in some cases, stopping the changes which normally take place in the food. (111, 112.)

Dr. WILEY does not think that any manufacturer deliberately puts poisonous bodies into food because they are poisonous. Preservatives usually are not poisonous in the ordinary sense, like morphine, strychnine, or prussic acid, which attack the nerve centers, but are poisonous because they act on the digestive organs and interfere with digestion. Digestion begins as soon as the food enters the mouth, starch being changed into sugar by the saliva. Preservative materials taken into the mouth, therefore, begin at once to interfere with digestion. The saliva will often in 30 seconds change starch into sugar, so that if potatoes or bread be chewed for 30 seconds or a minute one will get practically all the nourishment it contains, as far as starch is concerned; while meat can be swallowed whole; for being digested in the stomach and not in the mouth, chewing does no good except mechanically. Meat-eating animals digest their food in the stomach, swallowing it whole, while some herbivorous animals chew their food twice. There is no preservative which paralyzes the ferments that create decay which does not at the same time paralyze to an equal degree the ferments that produce digestion; so the very fact that a substance preserves food shows that it is not fit to enter the stomach, especially a delicate stomach. (48-46.)

Professor PRESCOTT, dean of the School of Pharmacy of the University of Michigan, says an antiseptic is by virtue of its character in greater or less degree an antidiigestive; an agent which will prevent fermentation or putrefaction will prevent the process of digestion by virtue of the same power. (196.)

2. Other considerations.—Professor PRESCOTT believes that in general preservatives and antiseptics in food are injurious to health. They invite the use of certain grades of food which the consumer would otherwise reject, and which are not rendered entirely wholesome by the antiseptic, although it may delay or even

prevent decomposition. Meat which would not otherwise be put on the market may be offered for sale after treatment with an antiseptic. Milk which has just begun to turn sour and could not be distributed to customers without the addition of an antiseptic may be brought back to something like an inoffensive condition so as to be acceptable to purchasers, though lacking the wholesome character of fresh food. (195, 201.)

Professor VAUGHAN thinks that while some preservatives must be allowed in certain foods, as a rule their use is to be condemned for two reasons: They enable men to sell poor-grade articles in place of a better grade, and enable manufacturers to be less careful in other means of preservation, as sterilization. (203, 204.)

Professor MITCHELL testifies that some antiseptics are used for improving the apparent quality of food. They do not actually improve the quality, but they cover up the poor quality. One objection to the use of preservatives is that they are coming to be used in every class of foods, so that while only a little is taken in each food, in the aggregate the consumer gets considerable quantities. (113, 116.)

Dr. T. C. DUNCAN, of Chicago, writes to the chairman of the committee expressing surprise at seeing statements that borax and salicylic acid can be used without harm, and saying that drugs can not be introduced into the system without doing violence to the organs, drugs not being foods and foods not being drugs. (47.)

C. Use of antiseptics defended.—Mr. MARC DELAFONTAINE says the outcry against the use of antiseptics is not well founded. Antiseptics have been used for centuries; that is, salt and smoke. Salt, the creosote in smoke, and vinegar for pickles are antiseptics. As the production of natural articles of food increases, and as the consumers live farther from the makers, it becomes necessary to use articles that will keep the food products fit to eat, and therefore to enlarge the list of antiseptics. The very best antiseptic affects digestion; from its very nature it will act either on the food itself or on the gastric or intestinal juices. The question is which antiseptic is least liable to be injurious. Little is known about formalin (formaldehyde) or about preservaline (sodium fluoride). The question which antiseptics are permissible, and up to what doses, is a question for further investigation. (232, 233.)

Mr. KNIGHT says that the sentiment regarding the use of preservatives is due to the use of preservatives in milk. The sentiment has extended without reason to other products, where the quantity used is so small as to be infinitesimal. (251.)

Professor EATON says the use of antiseptic preservatives in certain products is very general. He considers it safe to use them in such quantities as do not have a physiological effect. In the case of a cumulative poison, such as lead or mercury, the continued use should be taken into consideration in estimating the effect, but he does not think this should be done in the case of coloring matter or preservatives. If a single dose would not produce any effect, perhaps continued use would not. (235.)

Dr. HAINES, professor of chemistry in Rush Medical College, says that the ideal way of presenting food to consumers is without treatment of any kind, but it is often impossible to present it in a fresh state without treatment. A thousand times more damage has been done by the use of food that has not been preserved, through the generation of poisonous substances, ptomaines and the like, than by the preserving agents themselves. The use of antiseptics is therefore necessary and desirable. The question reduces itself to a choice of antiseptics. (233, 284.)

Dr. EDWARDS, while holding that fresh unpreserved food is the best, declares that it is far better to use some mild preservative than to allow decomposition to go on in food through the action of bacteria. (286.)

Professor CHITTENDEN, professor of physiological chemistry in Yale University, says that the primary object of the use of antiseptics is to prevent the development of micro-organisms. These organisms are not necessarily killed, but their growth is prevented, and the production of their poisonous products is consequently interfered with. Antiseptics do not necessarily interfere with digestion, though as a rule they would interfere with it if the quantity were large enough. (419.)

D. Difficulty of determining physiological effects.—Professor TUCKER says that it is difficult to make general statements of the effect of preservatives on health. Salt and sugar and alcohol are preservatives. There is room for difference of opinion as to the effects of borax, boracic acid, salicylic acid, and formaldehyde, in the quantities ordinarily used in foods. (434.)

Professor JENKINS, of the Connecticut agricultural station, says that it is impossible to give an accurate definition of the word poison. Every man's system is a law unto itself. The comfort of living of each individual depends largely upon his learning by his own experience what agrees with him and what does not. Professor Jenkins himself can not take sugar to any extent without being

made uncomfortable or even sick by it. Yet he has known of a man who was cured of violent attacks of dyspepsia by taking large quantities of sugar. There are some people who can not endure pickles, some who can not endure food preserved with wood smoke, or much salt food. The difference between the old-time preservatives and the modern ones is that every one knew which of the old preservatives he was using, by the smell and the taste, and could learn by experience whether it agreed with him or not. The modern preservatives do not betray themselves in such ways, and the individual has no opportunity to find out whether or not they injure him. Preservatives have a legitimate place in foods, but they certainly should not be used unless the use of them is distinctly stated on the packages which inclose the foods or unless notice of the use of them is given to the buyer. (449, 454.)

Professor AUSTEN says that it is very difficult to get a competent person in this country to conduct experiments to determine the effect of foods on animals and human beings. One needs to be a physiologist, a chemist, and something of a physician. Professor Atwater and Professor Chittenden, of Yale, are eminent and experienced men in this line of work. A younger school is arising, but the members of it are very few. (537.)

E. Formaldehyde.—*1. General statements.*—Dr. WILEY testifies that there are preservatives of a gaseous nature which can be used either in a gaseous state or dissolved in water, as formaldehyde or "formalin." Wood alcohol is easily turned into formaldehyde by simply extracting the hydrogen. Dr. Wiley has received a package from a peddler, who was selling a material to keep milk sweet, called "milk sweet," which was about a 1½ per cent solution of formaldehyde. By selling it to farmers by the bottle he could make a profit of about 3,000 per cent, and he was selling it all over the State of Illinois. The witness makes no objection to its use by those who like it, but would not want to drink much milk containing it, as it paralyzes the digestive ferments. (45, 171.)

Professor MITCHELL mentions the following preservatives: (1) "Milk sweet" and "milk and cream sweet;" (2) "freezine," put out by John B. Heller & Co.; (3) "Special M. Preservaline," put up in Chicago by the Preservaline Manufacturing Company and sold by the Creamery Package Manufacturing Company, also consisting of formic aldehyde. Packages of "Special M. Preservaline" have been seized in the milk houses of certain dairymen in Milwaukee. In one instance it was found in milk, and the party was prosecuted successfully. It has been advertised very strongly by circulars and handbills. Professor Mitchell showed the committee a sample of "freezine," claimed to do the work of ice and not to affect the flavor or fresh appearance of milk, cream, or buttermilk, the label having an apparently scientific exposition of what sours milk. On analysis he found it to be formic aldehyde. (112, 114.)

Mr. HELLER submits an extract from Merck's Market Report of September 1, 1896, describing formaldehyde as a stable, aqueous solution of formic aldehyde gas (HCOH):

"According to Dr. Berloiz (*Nouv. Rem.*, 1892) formaldehyde is perfectly harmless to man. Dr. Rideal states that he has frequently drank a 1 per cent solution without any ill effects. In a paper read before the Society of Public Analysts, London, on May 1, 1895, Dr. Rideal further states that 1 ounce of formaldehyde solution is used in the trade to do the same work as 5 pounds of the usual boric-acid and borax mixture (75 per cent of the former and 25 per cent of the latter). In the case of milk, for instance, the quantity of formaldehyde necessary to preserve it is, according to Dr. Rideal, so small that it is absolutely impossible to detect its presence by the taste or smell, even on boiling, when the formaldehyde passes off as a gas. In liquids, such as beer, formaldehyde has to compete with sulphites; here again, the quantity necessary to effect preservation is much smaller than the equivalent weight of sulphurous acid, and it can not be detected by taste or smell, although when sulphites are used it is frequently possible to notice them in this way. According to Jablin Gomnet, for preserving wine, 1 part of formaldehyde (as on the market) to 2,000,000 suffices; for beer, 1 : 1,000,000; for fruit jellies, 1 : 10,000. But from the reported innocuousness of formaldehyde, it may be inferred that these proportions can be safely exceeded, if necessary."

"Formaldehyde has a peculiar affinity for cellulose, thereby permanently retaining the latter in an antiseptic condition. After several days' contact with fruit or vegetable fiber the formaldehyde disappears as such and can no longer be detected by the methods of testing now in vogue."

* * * * *

"Formaldehyde solution is not eligible as a preservative of products that come into contact with iron, or whose color is due to the iron they contain—e. g., raspberries and strawberries. In such cases formaldehyde produces a purplish coloration."

"It appears from the above that formaldehyde is a valuable preservative, being at once powerful, innocuous, and convenient." (186.)

2. Its use condemned.—Dr. EDWARDS feels that we have yet only a small knowledge of the action of formaldehyde, but it has marked local effects; for instance, upon the upper air passages when inhaled; and it thickens and hardens the skin of the fingers. Its known effects would lead him to shun it as a preservative. (286.)

Dr. PIFFARD says formic aldehyde, which has been offered under various trade names as a preservative, is an active irritant poison. If given in homeopathic doses diluted up to the millionth or ten millionth part he does not know that it would have any effect. (191.)

Professor PRESCOTT says that formaldehyde, which is coming into quite general use as an antiseptic, is made by limited oxidation of wood alcohol. Wood alcohol is poisonous if not absolutely pure, and quite poisonous substances are included in ordinary crude wood alcohol. He counts formaldehyde as injurious and unwholesome. He does not doubt that it causes injury to some extent by its direct effects, and is sure that it causes injury by interfering with the digestive processes. (196.)

Dr. BILLINGS says formaldehyde is a product of wood alcohol, and is a bad thing to use in foods. (248.)

Dr. ALLPORT states that he has injected a one-fourth solution of formalin in water into a dead body, and within 24 hours the body was absolutely rigid; on being struck it gave a note such as one gets from a hard substance. The vapor of formalin is very irritating. It causes sneezing when it gets into the nose and throat, and it inflames the lining of the eyelids. It is exceedingly penetrating. Dr. Allport has used it for disinfecting clothing which had been exposed to yellow fever. The vapor of it was found to penetrate a pile of clothing to a depth of 4 or 5 inches. It would penetrate food products in the same way. It would render them distasteful, and, he thinks, would make them hard to digest. He does not think that any preparation of formalin could be made so mild as to be harmless in the preparation of food. (259, 260.)

3. Its use in milk defended.—Professor MITCHELL says formic aldehyde is absolutely deleterious when used in strong solutions, but not in the very weak strength in which it would be held in milk. "It is used in strong solutions to harden tissue for microscopic work, as it will kill and harden microscopic animalculæ very readily. If a drop of it is put into water, or any material containing those small, living organisms, they immediately give a few convulsive kicks and die. And the attempt was made by physicians, as it is such a strong preservative, to put it in morphine solutions—morphine quickly deteriorates after it is dissolved—to preserve those solutions and use them, for example, for eardrops, dropping in the ear in case of earache, and so on. But it was found that it killed the skin and the skin dried up and peeled off, and it could not be used, even in dilute solutions, in the ear, as a preservative, and the physicians who had lauded it immediately retracted their laudations." (112.)

Mr. ALBERT HELLER, of Heller & Co., says he manufactures freezine, freezem, and Ko-servirungs-salze. Freezine, advertised for preserving milk, cream, buttermilk, cream puffs, ice cream, etc., is also used for sterilizing and cleaning utensils in which milk is put. It is a 6 per cent solution of formaldehyde (CHOH), which is made from burning alcohol. Mr. Heller claims that it is not only perfectly harmless, but is positively healthful, especially for infants who are troubled with fermentation of the stomach. The object of the freezine is to control and retard the increase of bacteria in milk, making it more healthful. It is not used in sufficient quantity to kill the bacteria. Witness claims that by the use of freezine the percentage of loss in cholera infantum can be greatly reduced. Even in stronger solutions it would not be harmful. Mr. Heller mentions a case in which a woman took 2 teaspoonfuls of a 40 per cent solution of formaldehyde which a physician had given her for another purpose. It burned her as mustard would, and she immediately took an emetic. By the time the doctor came the burning sensation had disappeared and there were no ill effects whatever. The formaldehyde used in freezine is imported. Half a teaspoonful of the 6 per cent solution is used in 10 gallons of milk. The claim that freezine evades detection goes to show that the quantity used is so small that it is hardly a trace. Mr. Heller says if mothers would all use freezine in the milk they feed their babies the babies would not have sour stomachs, and there would be very little cholera infantum. He says there is not much freezine used. It has been shipped mostly to the East; some has been exported. Mr. Heller submits a letter from a dealer to the effect that the State of Ohio allows the use of formaldehyde in milk, but that the use of salicylic acid is a violation of the Ohio food laws. (171-176, 184, 185.)

Mr. Heller submits an extract from the Bulletin of Pharmacy, Vol. XI, p. 439, in which Prof. J. N. Hurty is quoted as follows:

"For a child affected with marked indigestion, obviously due to fermentation, I recently recommended that cow's milk be treated immediately after being taken from the animal with 5 drops of 40 per cent solution of formaldehyde to each quart, and that the child be fed with the milk thus treated. Two weeks' trial of pasteurized milk had not brought relief. Within 10 days after commencing the use of the formol-milk a decided improvement was apparent. Its continuation resulted in complete cessation of the symptoms. Now, after a 10 weeks' trial, with two intermissions, which admonished a return to formol-milk, the child is in excellent condition."

Professor Hurty goes on to say that he has himself used formaldehyde to prevent the fermentation which causes acid indigestion, with most excellent results. For 1 week, as an experiment, he took three times a day, after meals, 4 ounces of milk containing 5 drops of 40 per cent formaldehyde solution without the least untoward result. (185, 186.)

F. Boracic acid and borax.—1. *Nature and uses.*—Dr. ALLPORT says borax is made by combining about 100 parts of boracic acid with about 120 or 130 parts of carbonate of soda.

Dr. FRANK BILLINGS, professor of the practice of medicine in Rush Medical College, testifies that borax is a salt coming from the element boron, its chemical name being borobate of soda. It occurs in nature as borax and is often mined in its natural condition. It is used very commonly in medicine, and is even used in cooking very much as bicarbonate of soda is used. In recent years it has come into more common use, supplanting bicarbonate of soda both in domestic and medicinal use, because it is slightly antiseptic, stopping fermentation and decomposition better than soda, and is as good a neutralizer of acids. It is used very much in medicine for neutralizing acids and cleansing surfaces. Dr. Billings uses it every day in stomach disturbances for washing out stomachs, putting from 1 to 5 per cent in water to render it slightly alkaline to remove mucus from the surface of the stomach and to neutralize any abnormal acid which may be there. In surgery it is used as an antiseptic, both in washing and in packing wounds. It is dusted on the surface of wounds to keep them clean and to prevent the growth of pathogenic germs. (244.)

Dr. WILEY testifies that borax is used in butter, milk, and cream. (45.)

2. *In milk and cream.*—Mr. H. C. ADAMS says boracic acid or boric acid is very much advertised in Wisconsin, and when used it is used as a rule to cover up shiftlessness and carelessness in handling milk, for which there is no excuse. The tendency is unquestionably injurious to the public health. Wisconsin prohibits its use in milk. (209.)

Professor JENKINS says borax is often found in cream. (450.)

Professor MITCHELL produced a sample of "cream albuminoid" sold by the Creamery Package Company, of Chicago, consisting of boracic acid or borax mixed with gelatin powder in order to give a thick creamy consistency to milk or to thin cream. He considers it objectionable, both as an antiseptic and as a fraud, but there is a demand for such goods. (114.)

Dr. ALLPORT, a physician, states that the use of borax to preserve milk is allowed by the governments of Sweden, Norway, and Denmark. (256.)

3. *In butter.*—Mr. KNIGHT says the only antiseptic he knows of that is used in butter is boracic acid, powdered and refined to borax. So far as he knows, this is only used for the export trade; he has never heard of any being used for local consumption. The buyer can not detect it, but a chemist can detect it very readily. It is used universally in the butter that is shipped to England from Australia, in all the butter that goes from France to England, and in practically all that goes from Ireland to England. Its use in this country has been on the order of importers to England; an Englishman would order whatever number of boxes he desired and order it put up in that way. In America there is a prejudice against it and it will not be used except where it is ordered. There are laws against the use of borax in butter in Michigan, New York, and Minnesota. The butter-consuming States report no trouble about the keeping qualities of butter. The English public does not object to the use of borax, except where there is agitation. The Danish exporters of butter find it very easy to put butter into England without an antiseptic. The French butter known as Bretel-Frare butter, which is without salt, commands the highest price in England, but the most popular butter there is the Danish butter, which reaches the higher middle class. The Secretary of Agriculture used no preservative in his experiments in shipping butter to England. Americans have never made a success of shipping fine butter to England, not because of any lack of keeping qualities so much as because they

could not give a steady supply on account of the fluctuations of the home demand. (168-170.)

Mr. Knight has made a careful investigation in Liverpool, Manchester, London, and Bristol as to why American butter could not be placed on the English market in the same condition as butter going greater distances from Australia or Argentina. It was the universal verdict of butter men that American butter had not the keeping qualities of Australian, Argentinian, and French butters. One great difficulty is in the English method of taking care of butter without ice boxes. The largest importing firms told him that they would not think of importing butter from Australia or Argentina, or of putting the French butters on the market, without preservatives. They said the preservative used was practically all borax, differing from the borax that comes out of the ground in having been purified. It is mixed with the salt or sprinkled on the butter before working and worked in. Mr. Knight has been told by a representative of an Australian firm, which has charge of the exportation of 75 per cent of the Australian butter that goes to England, that they had practically come to the conclusion that the export butter trade from Australia would be a total failure without that preservative. (243, 244.)

Mr. Knight is informed that in butter exported from Australasia the rule is to use 1 per cent of borax. The working of the butter works out 20 or 30 per cent of water and about half the borax, leaving about one-half or three-fourths of 1 per cent. One-half of 1 per cent is the average advised by English importers. A certain English order for 4,000 boxes from Kansas stipulated that there should be 1 per cent of borax used, but as a rule it is taken for granted that the exporter knows how to put up butter, and they simply specify a boron preservative. America does not get very much of the English business because of the sentiment that has grown up here against the use of preservatives. The United States Department of Agriculture has for a number of years imported butters to show our butter makers what the English markets want, and then has advised them not to make butter like it. At the convention held at Sioux Falls, S. Dak., there were large exhibits, one of which was analyzed and shown to be preserved with boracic acid; but there was a strong sentiment against making butter in that way. Physicians who have made practical experiments extending over a period of years universally testify that they have had no deleterious effects from borax; while others testify that any kind of preservative is harmful on the ground that anything that will stop any kind of fermentation will also stop digestion. At one time a reward was offered for any case where it could be proved that there had been any injurious effects from the use of a boron preservative, but the case was not produced. (250-252.)

Mr. HENSHAW, an exporter of butter, says that the English trade are accustomed to preservatives in butter, and that his customers in England demand the use of borax. He has only been able to get one or two American makers to put up butter in this manner. Our people are very loth to take up new ideas in butter. (266.)

Mr. NORTH, an exporter of butter, states that in many countries on the continent of Europe and in many South American States butter which contains boracic acid is confiscated. Every European State has a law against it except Great Britain and France. In Germany the board of health forbids its introduction. In other European countries the administration of the law is under either the agricultural department or the customs department. The Danish anti-boracic-acid law went into effect on April 1, and the Brazil law about 30 or 60 days afterwards. In England the question is not settled; arrests are made in some counties for the use of boracic acid, and not in others.

Mr. CRACKÉ confirms the statement that the question is differently treated in different English counties, but thinks that this may be a matter of administration rather than a matter of law. (476-478.)

Mr. NORTH believes that boracic acid is as harmless as salt; but it ought not to be used in butter, simply because the use of it destroys the sale of American butter in so many foreign countries. It is not necessary. Out of 9,000,000 packages of butter that went into Great Britain last year only 19 per cent contained boracic acid. Denmark shipped 2,800,000 packages to Great Britain, or nearly one-third of the total, without a particle of boracic acid. Denmark rules the butter market of Great Britain, and is gaining in South America from year to year; more butter goes to southern climates in tins from Denmark than from any other country; and it is all free from boracic acid. If American butter were sent to England absolutely pure it could be distributed from there to the continental markets. This would open great new markets to our butter. Mr. North says that boracic acid retards the fermentation of butyric acid, but accelerates the formation of butyric ether and stearic acid; and these are much worse than the

acidity which would otherwise exist. Boracic acid can not, therefore, properly be said to preserve butter. (476-478.)

Mr. DELAFONTAINE has never found antiseptic preservatives in either butter or oleomargarine, but has never looked especially for them. He says the nature of the fat does not invite the use of an antiseptic. He does not know of any antiseptic which would prevent the fat from turning rancid. (281.)

4. In meat.—Dr. EDWARDS remarks that boracic acid, like carbonic acid, is not an acid in the ordinary sense. That is, it is not corrosive. It does not change the tissues it comes in contact with. It does not harden meat, as a brine solution does. He understands that meats preserved with borax are simply rolled in it, and that it is rather in the nature of a coating to prevent the germs of the air from reaching the substance of the meat. On this account much less of borax than of common salt is intimately mixed with the meat preserved with it. (288, 299.)

Professor JENKINS, of the Connecticut agricultural experiment station, states that borax has been found in 1 or 2 chickens brought from the West, and has been found in considerable quantity in sausages. From 8 grains to over 50, making seven-tenths of 1 per cent, have been found in a pound of sausage. Out of 75 samples of fresh oysters, 13 were found to have been treated with borax in quantities varying from $5\frac{1}{2}$ grains to more than 38 per pint. (450.)

Mr. ROBERT T. LUNHAM, of Boyd, Lunham & Co., pork packers, of Chicago, testifies that his firm uses borax only in its export meats. He would hardly call it a preservative, as it is used more to protect the meat than to preserve it. The meat is preserved before the borax is applied. The English people formerly found fault with the meat because it was too salty, and it was necessary to find something to obviate that. After a good deal of experimenting and investigating, it was found that borax was just the article required. It has served to solve the whole problem. They said, "That is what we want. Why didn't you give it to us before?" Boyd, Lunham & Co. began to use it in 1875, and their trade has been increasing ever since. The city of Liverpool alone will take from 18,000 to 20,000 boxes of bacon weekly. Twenty-five years ago they would not take that amount in a year. Ninety-five per cent of the meat for the fancy English trade is packed in borax, as directed by the orders. At the head of every page in the code books used are the words "To be packed in borax." If enough salt were put on to keep the meat in condition, it would be too salty. The meat is kept in salt or saltpeter until it is safe, and then packed with the borax sprinkled over it; but it does not cure any more. The borax has no effect on the strength of the ham. Mr. Lunham has always been under the impression that the meat did not absorb any of the borax whatever. A certain amount must remain on the surface, but the percentage must be very small. As little borax as possible is applied, because it is expensive. It simply keeps the meat from getting slimy when exposed to heat in transit. When it gets to England, the borax is all washed off. Members of the firm who have gone over and seen it unpacked have stated that there is about as much borax washed off as there was put on. From 1 to $1\frac{1}{2}$ per cent is used on the surface of the meat; as high as 7 pounds to the box of 500 to 600 pounds. If the meat is dry, less is used, because less adheres to it. It is brushed off as much as possible to economize the borax. If borax could not be used, something would have to be found to take its place. The Germans want their meat the same way as the English. Some classes of meat if shipped in salt would arrive in such shape that they could not be used, especially pickled cured meats, shoulders, etc. Mr. Lunham thinks that for the first year or so Boyd, Lunham & Co. were about the only users of borax. By degrees the other packers found themselves compelled to use it, and it has now been in general use for fully 20 years. Mr. Lunham has seen customers of the firm who eat the boraxed meat regularly. They look very healthy, and laugh when asked if it disagrees with them. He has never heard of persons being made sick through the use of borax. When he takes meat home, he always has it rubbed in borax. It keeps the flies off in summer. (239-242.)

Mr. HENRY ELLSWORTH, a commission merchant of Chicago, says that shippers do not think they can ship meats except in borax, and his experience has always been satisfactory when meats were so packed. He shipped by mistake a shipment of hams, half of which were packed in salt instead of borax, and the hams that were in salt got out of condition and were refused. He never had any trouble with meat shipped in borax, and never had any complaint as to its healthfulness. The orders from abroad stipulate that the meats shall be packed in borax. The meat is nearly always shipped before it is entirely cured. It is put into a box and rolled around in the borax. He does not believe that the borax goes into the meat, but thinks it keeps the pickle which cures the meat from running out. All packers use the same method. (253-255.)

5. *Injurious effects.*—Dr. DUNCAN submits a clipping from the London *Lancet*, a medical authority, to the following effect:

R. B. Wild distinguishes two forms of intoxication from boric acid—one in which a large quantity of the drug is rapidly absorbed, producing vomiting and diarrhea, general depression, and partial paralysis of the nervous and muscular systems, and perhaps death, a rash also being noted in many cases, especially some days after the absorption of the drug; the other class of cases results from the use of comparatively small doses of the drug for long periods. In some of these it is mentioned that the kidneys are diseased, and the author gives as a possible reason for immunity to the injurious effects of the acid its very rapid elimination by healthy kidneys. It is possible that cases of intoxication occur more frequently than is recognized. Boric acid may be unwittingly taken in food and cause a toxic skin eruption, which may be mistaken for eczema, psoriasis, or exfoliative dermatitis. A 1:500 solution corresponds to a 17.5 grams per pint of the acid, a very large dose for an infant on milk diet, and likely in some cases to produce disturbance of the alimentary canal. It should be ascertained that milk ordered in cases of kidney disease is free from excess of boric acid or borax. The use of boric acid or borax in surgery and their internal use should be carefully guarded in patients with diseased kidneys, and immediately discontinued on the appearance of dermatitis or other toxic symptoms. (47, 48.)

Dr. PIFFARD says there is no question in his mind as to the injuriousness of borax, and he expressed himself to that effect at the hearing given by the New York State senate committee in January, 1899. (191.)

Professor PRESCOTT says that his remarks as to the injurious effects of salicylic acid apply also to borax, the only difference being one of degree. (200.)

6. *Their wholesomeness affirmed.*—Mr. DELAFONTAINE says that boracic acid seems to be harmless, but is a comparatively poor antiseptic. (233.)

Dr. STRINGFIELD says that his experience has taught him that borax is absolutely harmless. (232.)

Mr. HELLER says that boracic acid is more healthful than saltpeter. (179.)

Dr. HAINES says that boracic acid produces a much less deleterious effect upon meat than common salt or saltpeter; that the juice of meat treated with it is retained more nearly in its natural condition. While cases of bad effects from boracic acid have been reported, he has failed to find a single case in which the bad results could not be reasonably attributed either to excessive doses, or to the disease for which the acid was used, or to personal idiosyncrasies, or to impurities in the acid. All these modifying circumstances are as likely to occur in the use of common salt or saltpeter as in the use of boracic acid. Certain persons can not take much salt without injury; others can not take saltpeter without injury. Boracic acid has caused fewer deaths than they have. Dr. Haines has in a medical way administered 10 grains of boracic acid four times a day for weeks and months, and has never seen a single case in which there was the slightest unwholesome effect. On the contrary the very happiest results have often followed such administration. His investigations have led him to believe conclusively that boracic acid and borax are not more dangerous than common salt and saltpeter as food preservatives, and are for various reasons to be preferred to them. (284, 285.)

Professor CHITTENDEN says that his experiments indicate that small amounts of borax increase rather than decrease the rate of digestion. This is especially true of boracic acid, which, combined with sodium, produces borax. If the quantity is large enough, nausea and vomiting are produced. In the analyses that have been reported at the agricultural experiment station in New Haven the percentages found have always been too small to be dangerous to the public health. Professor Chittenden would not consider one-half of 1 per cent of boracic acid in butter objectionable. (421, 422.)

Dr. BILLINGS says the dosage of borax is about like that of soda; for a grown person 10, 20, or even 30 grains three times a day for a week or two would be safe—probably more than one would get in butter and meat in a year. One does not give that amount continuously; one would not think of giving soda or common salt daily in that amount; the stomach would not tolerate it after a time. Borax, or boric acid (which is the essential acid from which borax is made) like everything else, would be poisonous if overused medicinally, especially in certain individuals, as some individuals have idiosyncrasies even as to the use of simple foods, such as honey or fresh fish; but there is no common bad effect from borax. Dr. Billings considers it no more injurious in overdosage than common salt would be. Fish and meats preserved with common salt, if used too frequently and without other foods, produce scurvy; and if meats preserved with borax were used in the same way an untoward effect might be produced; but he thinks the same amount of borax can be safely used as of salt. There is probably no more danger in its constant use than in that of salt. Both common salt and

borax, or boracic acid, up to 2 per cent, increase the power of salivary, stomach, and intestinal digestion, and apparently hasten digestion. More than 2 per cent apparently retards it. From 1 to 1½ per cent of borax on meat probably could not do any special harm, but it would be impossible to have that amount of borax on food when it was simply put on to preserve it; it penetrates the surface of the meat only to a slight extent. It has come in recent years into more common use in preserving meats, especially hog products, and in preserving butter, because it was found that these things kept better with it than with common salt. (244-246, 250.)

Dr. ALLPORT says that he considers borax and boracic acid identical in their antiseptic effect. The salts of soda are in most cases almost entirely harmless. They can be given in doses three or four times as great as the corresponding salts of potash. Salt peter is a potash salt, and in Dr. Allport's judgment more dangerous than borax. He has administered from one to two teaspoonfuls of boracic acid in a day without any harmful results. The effect of any substance which limits bacterial growth is in general rather to increase the digestive powers of the gastric and intestinal juices. Boracic acid is given in large doses, from 5 to 10 grains, in many forms of acid dyspepsia. Dr. Allport has never had direct knowledge of any case in which boracic acid has produced poisonous results, though he knows that such cases have been recorded. Boracic acid is applied to wounds; in some cases as much as half an ounce at a time. It may then remain undisturbed for from 6 to 15 days, and no evidence of irritation of the skin will appear. It is applied to extensive burns without any injurious effects, though burned surfaces absorb large quantities of harmful drugs. Dr. Allport knows of no medicament that is so harmless and so productive of benefit to the system by the extirpation of germ life as boracic acid. He considers that there should be no opposition to the use of it as a coating for meat. One of its many advantages is that it is readily soluble in water, and can be removed, if removal is thought desirable, by washing.

Any alkaline salt is harmful to the system if used in large quantities. Salt meat produces scurvy. It is probable that such an effect would not be produced as quickly by the use of borated meat. (256-260.)

Mr. NORTH, although he opposes the introduction of boracic acid into butter for commercial reasons, believes that boracic acid is as harmless as salt. He has taken half an ounce of it in a glass of water, and it has done him no harm whatever. (477.)

Dr. HENROTIN states that he has had many years' experience in the use of boracic acid and borax, both internally and externally. He has used it in nearly all the cavities of the body. Even when it is applied externally it is absorbed to a certain extent. He has never seen an instance in which any irritating or poisonous effect could be traced to it. He considers it absolutely innocuous. (264, 265.)

Professor DE SCHWEINITZ says that in spite of the great hue and cry, especially by Germany, in regard to the use of borax and boracic acid in preserving meat, the work done from a physiological standpoint has proved as conclusively as such work can prove that they are perfectly harmless. Liebreich has shown conclusively that more irritation is caused by salt than by borax or boracic acid. The determinations of any one investigator, however, need to be verified by others, and Professor de Schweinitz would not recommend the use of borax or boracic acid. (614.)

Professor JAMES, editor of the National Druggist, says that he made large use of borax in preserving milk, meats, etc., while he was in the Confederate army, and that at a later time he spent nearly 5 months in the summer in the swamps of the Mississippi bottoms with 16 white men, besides colored drivers, and used boracic acid freely to preserve fresh meat, milk, etc., whenever they could be got. During those 5 months not a single man was sick. In particular there were no bowel complaints. Professor James ascribed this fact entirely to the use of boracic acid. When the Australian trade in refrigerated meats began, between 20 and 25 years ago, violent attacks on preservatives were made in the French journals. Professor Le Bon and Dr. Pelligot were especially prominent. Both of these men were afterwards convinced, by using it, that borax is a desirable preservative, and became strong advocates of it. Professor James very strongly favors the use of borax and boracic acid, and believes that they are as harmless as common salt. (267, 268.)

Professor James introduced in connection with his testimony a report of an English case, in which an attempt was made to put a stop to the sale of hams treated with borax. The medical testimony reported was overwhelmingly in favor of the absolute wholesomeness of borax, and the prosecution failed. (269-276.)

Professor James also introduced a report of a case tried at Solingen in September, 1898, regarding the use of ham preserved with boracic acid. The medical testimony as given in the report is overwhelmingly in favor of the use of boracic acid as a preservative. Dr. Liebreich stated on the trial that he had preserved sea fish with boracic acid, and eaten them for 8 days continuously, and that large dinners had been served with these fish without the least unpleasant results. The court held that the injuriousness of boracic acid had not been proved, and dismissed the complaint. (276-279.)

Dr. EDWARDS, professor of medicine in the Chicago Medical College, says that experiments show that 10 per cent of borax or boracic acid may be used without greatly interfering with salivary digestion; and this is far more than is used in preserving any article of food. Boracic acid, even in large doses, seems rather to aid than to retard digestion in the stomach and bowels. It is used medicinally in large doses; in the old days, when epilepsy was treated with borax, from 60 to 100 grains were not infrequently given without any noticeable effect on the organs. Relatively large doses are given even to children. It is used as a mouth wash for the new born, and infants may be allowed to swallow considerable quantities of it without any injurious effect. Burns are saturated with it to exclude germs; practically every other antiseptic is interdicted because of the danger of absorption. It is used in washing out the cavities of the body, even in the most delicate individuals. It is not certain that any death has ever been caused by boracic acid. Considering the small percentage of borax and boracic acid which is used in food it is absurd to object to their use as preservatives. (287-289.)

G. Preservative agents for meat. (See also *Boracic acid and borax*, pp. 97-102.)—
 1. *In general.*—Referring to the "embalmed meat" question, Mr. HELLER says that hams and bacons are actually embalmed, chemicals being used in curing them. It is absolutely necessary to use preservatives in order to cure meats to keep. Some use only salt and saltpeter, some use boric acid and salt. Boracic acid is often used in connection with saltpeter. All dry salt meat purchased by the English is required to be rubbed with boracic acid or borax; they will not buy it otherwise. The object in using boracic acid is that a mild-cured ham can be produced with a better flavor; without it, it would be necessary to use a very strong brine, and the meat would be hard, dry, and salty. The curing takes just as long with boracic acid as without. (179, 180.)

Professor MITCHELL showed the committee several samples of meat preservatives: (1) One, boxed and sold in Milwaukee, was called "New Method Meat Preserver," "highly recommended for preserving and protecting fresh meat; pork, liver, sausage, pudding, bologna, summer sausage, hamburger steaks, and chopped meats." Two ounces were to be used with every 100 pounds of meat. On analysis this was found to be sulphite of sodium, an undesirable food. (2) "Rosaline," a mixture of salt and niter, an aniline coloring matter, to make sausage look bright red, and probably some other substance. (3) "Freezem," sold by Heller & Co., for chopped beef, composed of sulphite of sodium, with a little coloring matter. (113, 114.)

Dr. EDWARDS says that some of the dangers of diseased pork are unquestionably removed by proper curing. (289.)

2. Sulphur and its compounds.—Dr. ALLPORT says that sulphur forms a hard coating of sulphides on the outside of meat. It has been said that sulphur vapors are not of value as preservatives because they do not penetrate. Dr. Allport regards the treatment with sulphur as next in value to the treatment with boracic acid, and preferable to formalin, salicylic acid, carbolic acid, or corrosive sublimate. (260.)

Dr. WILEY says sodium sulphite is common sodium with sulphurous acid. (178.)

Mr. HELLER says that in the preparation in which Heller & Co. prescribe sodium sulphite there are 2 ounces to 100 pounds of meat, or $\frac{3}{4}$ grains to 1 pound of meat. By taking half a pound of meat a man would get 4 grains. It is used only in chopped meat and hamburger steak. It is prescribed by physicians for fermentation of the stomach, to be used in quantities of about 4 grams or 60 grains 3 times a day. It is also used in medicine to cure canker sores in the mouth. The object of using it in chopped beef is to preserve it and to give it a nice color. If hamburger steak is allowed to remain on the counter without sodium sulphite in it, it will become tainted in a very short time; it begins to turn dark in two hours. If a preservative is used, the ptomaine germs and other poisonous germs can be prevented. Mr. Heller contends that a very small proportion of preservative in hamburger steak is absolutely healthful. (178.)

Professor MITCHELL says that butchers are in the habit of keeping a package of such compounds as "freezem" and sprinkling it upon odds and ends of fresh meat, which are cast into a barrel, and when enough has accumulated this is

ground up into hamburger steak; he has seen that done in Milwaukee. If a preservative were not used, they would have to keep the scraps in the ice box and work them up into hamburger steaks in small batches, after much shorter periods of time. This is part of the criticism he makes on the use of such preservatives. (188.)

Professor PRESCOTT says that what he said regarding salicylic acid applies also to sulphite of soda. The only difference is one of degree, and not sufficient to make any difference in legislation. (200.)

3. Salt and salt peter.—Professor PRESCOTT says salted meats are, in a sense, preserved meats. Common salt might be counted as a preservative, but is not wholly such; is in itself an article of food. (195, 201.)

Dr. BILLINGS says common salt is decomposed in the stomach and forms hydrochloric acid, the natural acid of the stomach. When taken in certain amounts it is salutary. The hydrochloric acid in the stomach is an antiseptic, and is the thing above everything else which preserves the body against germs which enter the stomach. It very materially wards off cholera and typhoid-fever germs. Common salt, if taken in large amounts, instead of producing that salutary effect, will sicken the individual and produce blood states similar to scurvy. (245.)

Dr. HAINES says that salt and salt peter, especially if an excessive amount is used, cause the juice of meat to run away, so that much of the value of the meat is lost. They also affect the fiber of the meats disagreeably, and make them less palatable and less digestible. Common salt used in large quantities is dangerous, and death has been caused by excessive doses of it. Salt peter has caused many deaths. (284.)

Dr. EDWARDS agrees with Dr. Haines as to the undesirable effect of salt and salt peter upon meat, and says that salt probably produces as many deaths as any of the milder antiseptics. (286, 287.)

Dr. BILLINGS says that salt peter is far more deleterious than common salt, borax, or bicarbonate of soda. It is a nitrate of potash, and potash salts have a more deleterious effect upon the body than do soda preparations, having a tendency to produce degeneration of muscle, and a considerably injurious effect upon the kidneys when constantly used. The nitrates have a more specific effect in that way than do the carbon compounds. (247.)

Mr. HELLER says salt peter has a direct effect on the kidneys which in some cases is not beneficial. (179.)

4. Smoking.—Pyroligneous acid.—Mr. HELLER says meats are still smoked, the object being to give them a flavor and color, not to cure them. This is sometimes done with pyroligneous acid, which is condensed smoke. (180.)

Dr. WILEY say pyroligneous acid is the distillation of smoke. (180.)

5. Refrigeration.—Dr. ALLPORT says that refrigeration is an excellent means of preserving meat, provided the temperature is maintained steadily at from 30° to 33°, and provided the meat is consumed as soon as it is removed from the cold room. The danger is in the tainting of the meat after it comes out of the refrigerator. (260, 261.)

H. Salicylic acid and other preservatives.—1. Sources and nature of salicylic acid.—Dr. WILEY says the most common antiseptic used in food preservation is salicylic acid, which was formerly derived by a very costly process from the willow, but is now made very cheaply from carbolic acid by a simple chemical treatment. Salicylic acid is preferred to creosote for the purpose of preserving foods, because it has no odor and scarcely any taste. He thinks every package of food preserved in that way ought to be marked, not prohibited. (44, 45.)

Dr. BILLINGS says salicylic acid is a natural product of some plants, especially the wintergreen. It is found to the extent of about from 70 to 80 per cent in wintergreen oil. The salicylic acid of commerce is made synthetically from petroleum; it is more directly harmful, and frequently irritates the stomach. It is used frequently in rheumatic disorders, but it disturbs the stomach very easily, and so is used in such compounds as salicylate of soda and salicylate of phenol. It is used as a preservative on meats, etc., but in very much smaller quantities than anything else. If mixed with boracic acid, it makes a compound so bitter that no one would eat the meat. It is a splendid antiflamentous and does not need to be used in large amounts. A quarter or perhaps one-tenth of 1 per cent would stop the fermentation of cider, for instance, and in that amount would do absolutely no harm. (248.)

2. Injurious effects.—Professor PRESCOTT says the effect of the continued use of salicylic acid, which has perhaps been used more than any other antiseptic, is injurious to the organs of secretion. (195, 196.)

Dr. WILEY says salicylic acid is very deleterious to health. Most stomachs can take a little salicylic or sulphurous acid with impunity, but when the flow of

pepsin is insufficient or deficient in quality, they interfere very seriously with digestion. (44.)

Professor CHITTENDEN says that according to his observation the effect of salicylic acid is almost invariably to retard digestion. It is said that the long-continued use of it produces local effects on the mucous membrane; but he does not know by personal experiment. He questions the propriety of the use of it. (421. 425.)

Dr. EDWARDS, professor of medicine in the Chicago Medical College, holds that salicylic acid should not be used as a preservative if it can possibly be avoided. Certain individuals may suffer serious accidents from it. It depresses the heart; it often congests the lungs; it is apt to disturb the digestion. It may irritate or actually inflame the kidneys. In susceptible infants it may produce delirium or convulsions. (286.)

Dr. STRINGFIELD says that salicylic acid depresses the heart and the respiration. It is more dangerous now that it is made from coal tar than it formerly was when it was made from oil of wintergreen. Dr. Stringfield has had cases in which death has seemed imminent, where the patient has said that he has not drunk anything but beer, but has been drinking that for several days or a week or two. He has had cases where death was apparently due to depression of the heart caused by the use of salicylic acid. Dr. Stringfield does not specifically state that the beer to which such results were attributed was analyzed to determine the presence of salicylic acid. (282.)

Mr. HELLER says there are preservatives which are dangerous to health; salicylic acid is one of these, and is never used by Heller & Co. (178.)

Mr. THURBER says that the consensus of opinion of medical men is that salicylic acid is deleterious. It is true that the quantity must be considered; a very small quantity of any substance may not be injurious, while a larger quantity would be. (581.)

Professor JAMES, editor of the National Druggist, is opposed to the use of salicylic acid, because many individuals can not tolerate it, even in minute quantities, on account of idiosyncrasies. Besides, it gives an unpleasant flavor to things in which it is used to any extent. (268.)

Professor VAUGHAN has seen at least one person very severely poisoned from drinking cider containing a very large amount of salicylic acid. He does not know how cider can be kept without using a little salicylic acid, and thinks it should be allowed in a prescribed amount. (204.)

3. Its use defended.—Professor TUCKER thinks that salicylic acid is the least objectionable of the preservatives now said to be commonly used. He believes it has been prohibited in several foreign countries, at least in goods for home consumption. He would not give it as his opinion that it is necessarily harmful to all persons in such small quantities as may suffice to preserve certain foods; but there is some evidence tending to that view, and he thinks that when it is used in any article it would be desirable to have the fact stated upon the package. (435.)

Mr. DELAFONTAINE says that salicylic acid, which is tabooed in some countries, seems to be very largely used here without any apparent harm. This may be due to the fact that very little of it can be used, it is so little soluble. (232.)

Mr. SCHWARTZ regards salicylic acid as wholesome. He states that it is used in large quantities as a medicine for rheumatism, etc. (368.)

4. Salicylic acid in wines and grape juice.—Dr. WILEY says that wine and some other high-grade beverages often contain salicylic acid. Of six samples of wine which he purchased for examination, one, of domestic origin, contained no preservatives, and two whose labels indicated foreign origin also contained none. The other three, which were nominally foreign, contained salicylic acid. (45, 586.)

Dr. Wiley says grape juice, such as is used in churches for communion service, is now generally made of salicylic acid and a little bit of grape juice. It can very seldom be found composed of pure fruit juice. (44.)

Dr. MCMURTRIE says that unfermented grape juice preserved by carbonic-acid gas under pressure is preserved by the most desirable agent available. He considers such juice much pleasanter than that preserved by pasteurization or by the use of acids. (603.)

5. Fruit preservative.—Professor MITCHELL exhibited to the committee a preservative compound for use in canning fruit, composed of salicylic acid, salicylate of soda, and phosphate of soda. The manufacturers sell the process, which they call "the American woman's standard canning process," and give the material. Their circular states that it is not a salicylic-acid process. Owners of large orchards will frequently pay a large sum for the process and will put up their goods unknowingly with salicylic acid, without boiling and using less sugar, and so innocently injure the public. The ingredients are deleterious. The manufacturers rented a booth at the State fair and hired a lady to show canned goods pre-

served with this material. The fruit had not been boiled and was very bright and of good color. They find ready sales and their counters are generally crowded. (115, 116.)

6. *Cider preservatives.*—Professor MITCHELL says that cider was formerly made and used while it was fresh and sweet, and when it got sour it was allowed to go into vinegar and sold as such. But now it seems that cider merchants think it necessary to keep cider in its apparently new state by the use of preservatives, which the witness thinks objectionable. (116.)

Professor HALLBERG says cider is now preserved chiefly with fluoride of ammonia or soda, one of the most powerful disinfectants. When it decomposes it furnishes hydrofluoric acid, which is used to etch glass, and is the only substance known that can not be kept in glass bottles. (85.)

7. *Saccharin.*—Dr. WILEY says that saccharin is not a sugar, but a coal-tar preparation, having a sweet taste, but indigestible, every particle taken into the body passing off unchanged. It has no food value, but is an antiseptic, and therefore retards digestion; is an excellent paralyzer of ferments, and a sufficient quantity will arrest digestion completely. It has been used very extensively as a preservative. (44, 58.)

I. *Beer preservatives.*—1. *Comparative disuse in domestic beer.*—Dr. WILEY testifies that salicylic acid has been used very largely in preserving beer, which must either be sterilized (which is preferable) or contain a preservative, unless it is to be consumed within 10 days or 2 weeks after bottling. Otherwise, beer subjected to the ordinary high temperature of summer would speedily disintegrate and lose its flavor and have an excess of gas. Nearly all dealers recognize the necessity of using preservatives when sterilization is not practiced. Salicylic acid has not often been found in beer since attention was called to its harmfulness in the report of the Agricultural Department on beverages. (44, 45.)

Mr. THOMANN, secretary of the United States Brewers' Association, says that he can not state whether or not a brewer here and there may use preservatives. He knows that dozens of brewers do not use them. He has frequently found brewers unwilling to ship beer for long distances because they were opposed to using preservatives and could not guarantee that their beer would keep. On this ground brewers declined to send their beer to the Paris Exposition.

Dr. WILEY confirms this statement of Mr. Thomann's, saying that the almost universal response from brewers who were invited to make exhibits of beer at the Paris Exposition was that they were unwilling to send their beers to be placed on exhibition for perhaps 6 months, and afterwards tested by a jury, because their beers contained no preservatives, but were only pasteurized, and could be kept by that means for not more than 2 or 3 months. (356-359.)

Mr. PABST states that he uses no salicylic acid or other preservatives in his beer. He has heard of its being used, perhaps 8 or 10 years ago. Knowledge of beer making has increased since then. Bottled beer is pasteurized now, and Mr. Pabst does not think that salicylic acid is used by any brewery in this country. (312.)

Mr. OEHNE says that antiseptics may have been used years ago in bottled beer, but that since the adoption of pasteurization he does not think that any have been used. It is not necessary, and he can see no reason for it. It is possible that some salicylic acid may still be used by a few brewers for preserving bottled beer, but not 5 per cent of the beer made in the United States is bottled. (294, 296.)

Mr. BUSCH asserts that if beer has a proper age in the cellar before it is turned out for consumption it needs no preservative. What spoils beer is the yeast which may remain in it when it is sent out. It should "lager" or lie in storage for from 3 to 6 months. Then all the yeast will settle, and there will be no need of preservatives. (488.)

Mr. EVANS, a brewer of ale and porter, says that he uses no preservatives in his products and does not pasteurize them. Ale and porter do not spoil as lager does in shipping. Present-use ale, made for immediate consumption, does not have a chance to spoil. It is all fermented in the bottle. Stock ale is brewed with the idea of keeping in any temperature. It may be kept even in wood from 18 months to 8 years, according to the character of the goods. (417.)

Mr. HACHEMEISTER, treasurer of a brewing company, says that his company uses no preservatives whatever. Beer that is to be shipped they simply pasteurize. (415.)

Mr. BAUER, a brew master, says that no preservatives are used in his beer. (290.)

Mr. LIPPE says that he uses no antiseptics in his beer. He sells beer only to men who have facilities for pasteurizing it. If a foreign house should apply to him for goods in bulk he would make it plain to them that the goods would not

keep unless they were subjected to a very low temperature. Beer can be without damage on the large steamers which have cold-storage facilities. Pasteurizing process can not be applied to beer in wood. The heat would be very great to penetrate 2 inches of wood and the great bulk of the cost (881, 884, 885.)

Mr. KRUESLER, a brew master, says that he does not use any preservatives or antiseptics in his beer. (877, 878.)

Mr. HUFFEL says that he uses no preservatives or antiseptic in the manufacture of his beer. He thinks he did use some salicylic acid about 10 or 12 years ago for bottling purposes in the summer. (379.)

Mr. THOMANN says that pasteurizing has largely done away with the necessity of using antiseptics in beer. The process does, however, take away some of the fine flavor of the beer. Beer drawn freshly from the wood is considered better. (857.)

Mr. FECKER says that while the use of preservatives may have been necessary years ago, it is not necessary now, since the introduction of ice machine pasteurization. His company has used none for years. It would be a waste of money to use salicylic acid. (298.)

Mr. PLAUTZ, secretary of the United Brewing Company, declares that pasteurization preserves beer as long as it needs to be preserved, and that there is frequently no need of using salicylic acid or any preservative in either keg or bottle beer. If one were to export bottled beer to a southern climate it would probably be well to put a little salicylic acid in it. Mr. Plautz does not know of any brewery which uses salicylic acid or any similar preservative. (300, 301.)

Professor VAUGHAN thinks there is no need of using salicylic acid or any other preservative even in export beer, if it is properly made and properly stored. (204.)

Professor JENKINS states that of 7 samples of ale examined by the Connecticut agricultural experiment station only one was found to contain salicylic acid. (452.)

The printed testimony is accompanied by an anonymous statement "doctoring beer," to the following effect: The preparation of beer, in consequence of scientific research, is now more deliberate, methodical, and reliable than formerly. Beer is a beverage prepared from cereals, as barley, rice, corn, or oats, seasoned with hops, and fermented. In former years articles were added to give a certain taste or increase its stability, but this practice was given up by brewers almost on their own account, because it appeared useless, and it was found that with proper management the natural way was best. Stability only remained as a vexed question. The brewers do not willingly emancipate themselves from preservatives, which perhaps promote carelessness and unprofessional work. There is no room in beer for chemicals of any kind, as distinguished from natural product. Brewers can get along without carbonate of soda, salicylic acid, benzoic acid, saccharin, ammonium fluoride, etc., and must reach the point where they can prepare stable beers of good taste without adding foreign substances. There is no objection to sterilizing beers by high or low temperatures, but it ought to have nothing to do with drugs, for they can not take the responsibility for them, which belongs only to chemists and physicians, and their use is due to a certain lack of competency, giving their enemies a weapon, enabling them to bring the brewing trade into disgrace, and affording a pretext to legislatures to lay heavy hands upon the industry. Germany, the greatest and most renowned beer country in the world, has long since done away with these drugs, and the scientific practical authorities of that country, who speak with respect of American brewing methods, are shocked by the public advocacy of preservatives. (49, 50.)

2. Use in beer for export, bottling, and long shipment.—Mr. BROWN, president of the Long Island Brewery, says that he uses preservatives only in bottles for export or for distant shipment. He has experimented with salicylic acid, but has not been very well satisfied with it. He does not use any preservatives in keeled beer, but would think it necessary if beer in barrels were to be shipped a great distance and subjected to changing temperatures. (386.)

Professor MITCHELL says preservatives are used especially in beer for bottling and exporting. Brewers who have good methods do not need to use them in beer which is quickly consumed, but in bottled beers which are shipped over distances the easier way is for the brewers to use preservatives. He has used antiseptics in some of the bottled beers. (116.)

Mr. ZELTNER, a lager beer brewer, says that he uses salicylic acid in beer which may go out of the country and be kept for an indefinite time. (456.)

Mr. WACKENHUTH, brew master for Ballantine & Co., says that he uses salicylic acid for bottling beer only, and only for about 5 months in the summer. He considers everything that he uses perfectly sound and healthful. (413.)

Mr. WYATT states that there is practically no use of antiseptics in barreled beer designed for draft purposes, except when it is shipped, as it sometimes is, from one end of the continent to the other, and may be exposed to severe and sudden changes of temperature. In such cases it has been customary, and he has advised brewers, to use salicylic acid, which he regards as the least harmful of antiseptics. The amount used would be about one part in five thousand, or a little less than half an ounce per barrel of 31 $\frac{1}{2}$ gallons. That is about one-fourth grain of salicylic acid per glass of beer. Mr. Wyatt would only advocate the use of antiseptics when it is absolutely necessary for the preservation of the beer. He has never known of the use of any other preservative than salicylic acid and bisulphite of lime. He has heard of various others being proposed, but has always denounced them. The great majority of brewers do not do a shipping trade, and never use a particle of salicylic acid. (406, 407.)

Mr. SCHWARTZ, a consulting brewer, says that salicylic acid and compounds of sulphurous acid, such as the sulphites of sodium, potassium, and lime, are used in moderate quantities in shipping and bottled beers. He considers them necessary, and harmless in the quantities in which they are used. Whether the beer is in wood or in bottles, if it is to be exposed to frequent changes of temperature, something should be added to keep it good. Even when beer is pasteurized a little preservative should be added. It is impossible to employ sterilized bottles; the filling implements, hose, and so forth, are more or less exposed to the air, and it is impossible altogether to exclude bacteria or to be sure of destroying them by steaming. It is not necessary to add a preservative to beer which is to be used near the place of manufacture, and without long keeping.

Alluding to the fact that the addition of preservatives to beer is forbidden in Bavaria, Mr. Schwartz says there is no country where there is more complaint about the quality of beer, and he attributes the complaint to the lack of preservatives. It is impossible in any country, he says, to exclude the germs of bacteria. They cause a change of flavor and taste, which can not be stopped because the use of preservatives is forbidden. The result is that the beer is found poor and bad and it is thought that the brewer must have used improper materials.

Mr. Schwartz would recommend for bottled beer about half an ounce of salicylic acid to the barrel of 31 gallons, or less than one one-hundredth of 1 per cent. (367, 369, 372.)

Mr. WIGAN, a brewing master, says that he uses bisulphite of lime, and he seems to intend to say that he also uses salicylic acid. He would not use so much as one one-hundredth of 1 per cent. The general tendency is to increase the quantity used with the warmth of the climate. Yet in his experience in England he used rather more than he is accustomed to use in America. (375, 376.)

3. In foreign beers.—**Mr. WYATT** says that he has had occasion to analyze imported beers and ales and wines and has almost invariably found preservatives in them. He would use them if he were shipping to a foreign port. The phrase "Bass stink," which used to be used to describe the smell of Bass's ale, referred to the odor of sulphuretted hydrogen, which came from the bisulphite of lime which was used as a preservative. A long series of experiments, extending over many years, has shown that bisulphite of lime has no injurious effects whatever, and is a much more desirable antiseptic than salicylic acid. It is found impossible to use it in this country. People will not drink American beer which contains it. The trouble may be in the nature of our water or in some fault of manufacture. (407.)

Mr. SCHWARTZ states that imported lager beer contains about the same amount of salicylic acid which is used in this country, and that imported ales from England contain sulphites in larger quantities than are used here. (372, 373.)

Mr. PLAUTZ thinks that all beers imported into this country contain a very little salicylic acid. The Bavarian Government prohibits the use of salicylic acid, but would not prohibit it, Mr. Plautz thinks, if the beer were to be exported. (300.)

Mr. THOMANN says that the Bavarian law forbids the use of preservatives in beer, but he thinks it is tacitly understood that preservatives may be put into beer which is to be shipped beyond seas. Mr. Thomann does not believe that the beer could be sold here in such an excellent state of freshness if preservatives were not used. Bass's ale has a peculiar smell when the bottle is opened, which is sometimes called the "Bass stink." This is the smell of the preservative. (358.)

Dr. WILEY says that among 15 different beers bought at different places in New York, at least half of them being foreign, 4 were found to contain salicylic acid. Of the foreign bottled beers, 2 samples contained salicylic acid in quantities sufficient to preserve them from fermentation. Of the domestic beers bottled and sold within 2 or 3 weeks only 2 contained salicylic acid. (584.)

Mr. EITEL, an importer of beer from Bavaria and Bohemia, asserts positively that the beer which he gets from Munich contains nothing but malt and hops.

The Bavarian Government would not allow the use of salicylic acid or any other chemical. The beer which is exported direct from Germany has consular investigation at Munich, and is shipped in bond to the United States. (290, 291.)

Mr. ROCHE, who imports Bass's ale and Guinness's stout in hogsheads and bottles them at New York City, declares that they are put into the bottle without the addition of any adulterant or preservative. They undergo a secondary fermentation in the bottle, which increases the proportion of alcohol and carbonic acid. The witness does not add any yeast or other material. (414.)

An affidavit of Mr. LA TOUCHE, managing director of Arthur Guinness, Son & Co., Limited, was presented, in which it was asserted that the stout brewed by that company for exportation keeps in the bottle for an indefinite period, though exposed to a wide range of temperature, and that no antiseptic and no material of any kind, except malt, hops, yeast, and water, is put into it. The stout brewed for export has a larger proportion of hops than that brewed for the home market, and this helps to preserve it. It is stored and matured from 1 to 2 years in large bulk vats. The specific gravity of the extract of malt before it is fermented is from 1072 to 1074. On the market it contains about 6.1 per cent, by weight, of absolute alcohol, and 6 per cent of solid matter. The company is opposed to the secret and uncontrolled use of antiseptics, and believes that the bulk of the credited evidence tends to prove that the use of them is physiologically injurious. It is admitted that malt liquors which contain little malt extract and little alcohol due to fermentation would require some preservative to enable them to withstand severe atmospheric and climatic conditions. Beer brewed from perfect materials, with a high proportion of hops and of alcohol, will remain sound and palatable for an unlimited time. (544-546.)

J. Proposed legislation.—1. Publicity.—Dr. WILEY maintains that no food should ever be offered for sale containing a preservative without that fact being plainly marked upon it. He would not prohibit the use of preservatives, as they are often desirable in certain articles of food, as in catsup; but each preservative should be used under its proper name and be properly understood by everyone using it. Even a remedy should not be used under a name by which it is not known. There is a fraud upon the public in using a very cheap substance under an unknown name and selling it at an immense profit. (44, 184.)

Professor JENKINS says that the United States Government, if it passes a pure-food law, ought to forbid the use of antiseptics that are not evident to the taste and smell, unless their presence is called to the attention of the purchaser, either by a label or in the sale of the article. (454.)

Professor A. B. PRESCOTT, dean of the School of Pharmacy at the University of Michigan, believes that preservatives should either be prohibited or announced upon the label or in the name of the food. (195.)

Dr. FRANK BILLINGS, professor of the practice of medicine in Rush Medical College, believes that Government officials, both national and State, should place upon food packages a notice indicating how the contents are preserved; but he thinks that they should also convey to the public the fact that the ingredient used as a preservative is practically harmless. He believes that the best way would be to have a national board. (247.)

Mr. ALBERT HELLER, of Heller & Co., believes that harmless preservatives should be allowed to be used in food, in order to cheapen food products in certain cases. If they were marked, the poorer classes would be afraid to use them, or backward in buying them. A law requiring the marking of all food products would affect the manufacturing industries very much indeed, and do great damage to the country. (181.)

2. Limitation.—Professor HALLBERG says antiseptics should not be entirely prohibited, but their use should certainly be limited. We should not rely upon the various manufacturers to use their own judgment; the limit must be placed by high medical authorities after thorough investigation. (81.)

3. Prohibition in certain cases.—Professor VAUGHAN thinks no salicylic acid or butyric acid or anything of that kind ought to be allowed in preserving fruits or jellies, because if the sterilization is complete these things can be kept without any antiseptic. (204.)

Professor PRESCOTT thinks it would be wise to prohibit the use of salicylic acid in malted liquors and wines, and the use of certain other preservative agents in foods. There may be some cases in which it would not be expedient to prohibit the use of preservatives. He would not undertake to decide as to the absolute rejection in all cases of such an article as salt peter or niter in the preparation of ham. (195, 196, 201.)

Mr. HELLER says deleterious substances should not be allowed, but if no preservatives could be used the manufacturers would have to quit business. The substances which are found to be harmless should be allowed. (182.)

XIV. DRUGS.

A. National Pharmacopeia.—Mr. C. S. N. HALLBERG, editor of the Western Druggist, professor of pharmacy of the Chicago College of Pharmacy, and a member of the committee on the revision of the Pharmacopeia of the United States, says that since 1820 delegates from all the medical and pharmaceutical societies of the United States have met in Washington every 10 years and chosen 25 members to issue a work which is the standard of authority for medicine. Outside of pharmacy, there is no standard for the identity, quality, purity, and strength of natural substances. He believes that a national food law should be based upon a work of standard authority, defining what natural substances are, their derivation, composition, strength, purity, and quality, as in medicine. (80.)

B. Unofficial and adulterated drugs.—1. General statements.—Professor HALLBERG says that in drugs and medicines outside the Pharmacopeia, the compounder must print the formula on the labels. This has now been in vogue largely more than 10 or 15 years, but has been so much abused that there is no longer any faith attached to the formulas. He thinks the adulteration of drugs has been carried on to a very great extent in this country. (86.)

Dr. PIFFARD says the adulteration of drugs is usually for the purpose of cheapening them, but it is dangerous to permit adulterations reducing the strength of drugs. (194.)

Professor MITCHELL says that most of the impure drugs he has met with were simply not properly purified to conform with the medicinal strength required. The drugs most adulterated are those commonly in use, such as household ammonia, root beer, so-called cherry phosphate, etc. (124.)

Mr. MURRAY says he has certain formulas to grind and mix to order for certain manufacturers, as for hog cholera. In most cases the ingredients are pure drugs, but some are not. (71.)

2. Bromo-seltzer.—Dr. PIFFARD refers to the offering by drug manufacturers of mixtures under names which give a false idea of their composition. The general impression is that bromo-seltzer is composed largely or wholly of bromide of potassium, or some other bromide, and the ingredients more or less natural to seltzer water. As a matter of fact, some of the bromo-seltzers contain very little bromide of potassium, their effect being due to some much more injurious substance. He mentions a case of acute poisoning from bromo-seltzer, in which the apothecary admitted that it was mainly acetanilide, and another case of poisoning in which an active poison had been added to the bromo-seltzer, but the chemist stated that there was acetanilide in it also. Dr. Piffard therefore presumes that the use of acetanilide in the place of bromide of potassium is rather prevalent in these mixtures. It costs less to produce an equivalent effect, and it is used as a cheapener. (194, 195.)

3. Black antimony.—Professor HALLBERG says there has not been any black antimony in the market for years, except in chemical specialties. What has been sold as black antimony is a mixture of powdered coal dust. Farmers formerly used this largely as an ingredient in powders for hog cholera, but of late there has not been much black antimony used, because the farmers found that they could get better results by burning corn. In this case the imitation or substitution proved a good thing, leading the farmers to see the great value of the grain for chemical purposes. Black antimony is defined as a sulphide of antimony, the ore out of which Brice tried to make gold. (84, 85.)

4. Paints and linseed oil.—Dr. WILEY says barites or sulphate of barium is sold as terra alba. It is very heavy, weighing more than any other white earth known. The witness has never found it in food products, but it is used largely in adulterating paints. It is a stone which makes a perfectly white powder, absolutely insoluble, even in the strongest acid. The only way to dissolve it is to fuse it in a white heat with caustic alkalies. (82.)

Dr. Wiley testifies that corn oil, extracted from the germ of the grain, is a partially drying oil, and has been used to adulterate linseed oil. He considers the oil adulterated in this way very much less valuable than pure linseed oil. (21, 22.)

C. Legislation.—1. Imported drugs.—Prof. HALLBERG says there used to be a great deal of adulterated opium brought to this country, but the United States Pharmacopeia fixed a minimum limit of morphine in opium at 9 per cent, and now the revenue officials examine all the opium imported, and do not permit the importation of any opium unless it contains 9 per cent of morphine. This shows the value of a standard. (88.)

Dr. PIFFARD says the United States Government does a great deal to prevent adulteration by refusing admission into this country of adulterated and inferior drugs, but it does nothing to prevent their adulteration after they are here. He hopes the proposed legislation will cover the matter of drugs. (198.)

2. Poisons in proprietary medicines.—Professor FREAR considers that when proprietary articles contain substances which are poisonous in an overdose, purchasers ought to be warned specifically what is present, or warned that an overdose should not be taken. (484.)

XV. GENERAL PURE-FOOD LEGISLATION.

A. Foreign laws.—Mr. I. GILES LEWIS says in some countries—Germany and France, for instance—the pure-food laws are very stringent, and make any violation a penal offense. He considers the English law unquestionably the best food law, because it applies to food for export as well as to that for home consumption, while the German and French laws allow antiseptics to go to foreign countries which would not be allowed to be used at home. This is especially noticeable in cheap German and French wines and in low-grade products usually sold to the poor, high-grade products being guaranteed by trade-marks, etc. While the Germans are very particular about the quality of their beer, it seems almost necessary that products containing very little alcohol which are to pass through the Tropics should have some other preservative. The English law compels the manufacturer to put on his labels exactly what the articles contain. Mr. Lewis thinks it rather oversteps itself, the manufacturer of the best mustard in the world being compelled to state that his high-grade mustard contains flour, which is absolutely necessary to preserve the mustard and to insure its delicate flavor when put into water. Every label must truthfully represent what the package contains, in a general way. The English law does not require the use of revenue stamps, and the Government issues no certificates. The witness considers the English law rather lame in this respect, viewed from our standpoint, but explains it by saying that the English people do not, as a rule, export foods, other than condiments. (34, 35.)

Dr. WILEY says the laws of most European countries forbid the addition to food products of certain antiseptics, such as saccharin and salicylic acid. (44, 52, 53.)

B. State laws.—1. In general.—Dr. PIFFARD says that in most of the States there are laws governing the adulteration of foods and drugs which look to be pretty good laws, but are insufficient, either (1) through the failure of the necessary appropriation to enforce them or (2) through lack of sufficient knowledge on the part of the officials charged with their enforcement. To illustrate a third cause of failure of these laws, Dr. Piffard says he has read the report of a chemist to the committee which employed him stating that he did not think it would be judicious to take action against the brewers, as that was such a large interest. Dr. Piffard made up his mind that the fellow was either a knave or a fool. (193, 194.)

Mr. THURBER testifies that he placed a thousand dollars at the disposal of the National Board of Trade some 12 years ago, to be awarded in prizes for the best draft of a food-adulteration act. A committee was formed consisting of a chemist, a jurist, a physician, and two business men, of whom Mr. Thurber was one. This committee awarded a first prize of \$500, a second prize of \$300, and a third prize of \$200 for the best drafts of an act to prevent the adulteration of food. The committee then formulated an act, taking the first-prize act as a basis, and the committee's draft is the foundation of the regulation of food in New York, Ohio, Illinois, New Jersey, Massachusetts, and other States. Most of the States have made variations in their provisions, but the definitions are largely those which the committee outlined. (580.)

Mr. MURRAY says that some of the State laws, as in Michigan, do not allow the sale of mustard or any other article that is adulterated or colored. (69.)

Professor AUSTEN says that bills have been introduced in various State legislatures making it a misdemeanor to use alum in the preparation of foods. In Missouri such a law was passed. A bill to enact exactly the same law was recently introduced in the Georgia legislature, but it did not pass. One was before the Virginia legislature when Professor Austen testified. He understood that similar bills were to be introduced in the legislatures of Massachusetts, New Jersey, New York, Connecticut, and perhaps some other States. Professor Austen understood that such bills were to be introduced in all legislatures where it was practicable, and as nearly as possible at the same time. He declared that the bills all emanated from one source, and that the whole movement was an attempt to gain the assistance of State legislation in preventing the sale of competitors' products. (533, 534.)

2. New York.—Professor TUCKER, director of the State board of health of New York, says that the law of New York with regard to pure foods is perhaps sufficient, but the difficulty is that the appropriations are not large enough for con-

stant inspection and for the prosecution of offenders. The law forbids the use of deleterious constituents, and a food preservative, if found to be deleterious, would not need to be specifically named in the law or the regulations of the board. The State board of health has a right to fix standards of purity for foods, but has not done so except in the case of mustard and one or two other articles. (433, 434.)

General examination of foods and drugs is under the control of the State board of health, except that dairy products and vinegar are under the State board of agriculture. A special law fixes the standard for vinegar at 4 per cent, he believes, of absolute acetic acid. (434.)

3. Pennsylvania.—Professor FREEAR states that the pure-food law of Pennsylvania, based upon the English laws, was passed in 1895, though special laws relating to milk, oleomargarine, and vinegar had been passed earlier. Since 1895 a very general examination of food products has been made, and a very widespread use of adulterated materials and misbranded goods has been revealed. The use of false brands has, however, been greatly reduced by the law of 1898. Sophisticators are constantly introducing new substitutes and new devices for evading the requirements of the law, but the cost of doing it is naturally increased, and the number of sophistications now found is much less than formerly. Public sentiment, too, has constantly grown in support of the effort to repress the sale of food preparations under misleading names. (528, 529.)

Professor Frear says that the most valuable feature of the Pennsylvania pure-food law is that which defines adulteration to consist not simply in the addition of injurious materials or the subtraction of valuable material, but also in the selling of goods under a false brand. The law does not require descriptive branding of articles, but forbids false branding. A preparation composed of glucose and containing no honey could not be sold as honey in the State. A mixture of 95 per cent of glucose with 5 per cent maple syrup could not be sold as maple syrup. Offenders are liable to a fine, and for a second offense to imprisonment. (481, 482.)

4. Wisconsin.—Professor MITCHELL says that Wisconsin has a prohibitory law against filled cheese, and that the matter is also well regulated by the national law. There were formerly 200 factories in Wisconsin making filled cheese, but there are now none. (110.)

Professor Mitchell says the law of Wisconsin establishes the standards found in the Pharmacopoeia. In enforcing the law discretion has been used, so that when articles fall slightly below the standard the seller has not been prosecuted, but in flagrant cases of adulteration the Pharmacopoeia has been used as evidence of what the standard product should be, and the courts have never failed to support the State officers. (122.)

Professor Mitchell reports the manufacturers of the purer and stronger flavoring extracts as saying that their sales have trebled in Wisconsin since the enactment of the State law requiring the composition to be stated. (124.)

5. Ohio food commission.—Professor HALLBERG says that a commission composed of two inferior chemists was founded in Ohio in 1898 to examine Scott's cod-liver oil, and reported that it was loaded with morphine. Examination afterwards showed that there was no morphine in it, and the food commission of Ohio was placed in jail. Anyone familiar with the situation, Mr. Hallberg says, would know that there could not possibly be any morphine in this preparation. (80.)

C. National law needed.—1. General proposals.—Dr. WILEY calls attention to the lack of any Federal law in this country forbidding traffic in foods preserved in any way; nor is there any national law that would prevent the introduction of adulterated foods from abroad unless it could be proved to a court that they contained injurious ingredients, in which case they could be excluded under the general act forbidding the importation of injurious substances. There is no recent law regarding this matter, and unscrupulous dealers can send to this country articles which their own laws forbid them to expose for sale at home. This applies to wines, beers, and preserved foods of all kinds. Immense numbers of sausages and other kinds of meat are imported, and only a chemical examination can show how they are preserved. There being no law regulating their sale in this country as there is in the country of origin, we are placed at a disadvantage. State laws regulating commerce in adulterated foods can not reach manufacturers in other States; hence the necessity of a Federal law. (53.)

Professor FREEAR says that the burden of prosecution under State food laws necessarily falls first upon the retailer, and often altogether upon him. No doubt he is often guilty of knowingly selling spurious articles, but he is often himself the victim of deception. When the goods have been bought from persons outside the State, he has practically no redress. Moreover, goods sold in the original packages

are free, under the decisions of the Supreme Court of the United States, from any interference by State law. A national law is therefore absolutely necessary to supplement the efforts of the States. Congress can control the whole matter within the Territories, and can also save our legitimate food manufacturers from the competition of cheap, misbranded, and adulterated substitutes imported from foreign lands. It can preserve the reputation of American products abroad, and so extend our export markets by the stopping of exportation of inferior and misbranded products. (529, 530.)

Mr. BERRY, of the Chicago Sirup Refining Company, thinks a national pure-food law would be a grand, good thing. The States that have pure-food laws compelling goods to be marked for what they are have a decided advantage over the States without such laws. In the States with pure-food laws the demand for pure goods is increasing. (97.)

Mr. GREAME STEWART, a wholesale druggist, urges the necessity of a national pure-food law. Various States—Michigan, Illinois, Wisconsin, Minnesota, and others—have pure-food laws, and errors are very likely to occur in the shipping of goods on account of a lack of uniformity in these laws. For 10 years the merchants and manufacturers of Chicago have been clamoring for a national pure-food law. It now requires a lawyer for each State to know what the requirements are. With a national law goods could be shipped without fear of violating any local law. It would expedite business. (78.)

Mr. SCULLY, of the D. B. Scully Sirup Company, thinks national legislation the better plan if we are to have pure food. Now every State has different ideas, and manufacturers have to put different formulas on goods going into different States. This is very complicated and annoying. (98.)

Mr. H. C. ADAMS, dairy and food commissioner of Wisconsin, thinks there should be a national pure-food law beyond any question, and that Congress should go to the limits of its constitutional authority in making that law comprehensive and stringent. Congress could not cover the whole subject, because it could regulate the matter only as it applies to interstate commerce, the Territories, and the District of Columbia, but it could give the States a model food law. There are now food laws on the statute books of every American State, but they vary in character, and it is simple justice, not only to the consumers, but also to the manufacturers, that uniformity should be secured if possible. The tendency of strong national legislation would be to secure that uniformity. (207.)

Professor MITCHELL raises the objection against State legislation that the laws in the various States do not correspond, and manufacturers in sending goods into various States have to be careful about labeling and sending the goods. The manufacturers would like uniform legislation, and he thinks that none of the State departments, except one or two, would object to it. Professor Mitchell thinks national legislation establishing standards very desirable. It could at least regulate the sale of goods in the Territories and traffic between the States, and the State laws could easily control home manufactures. A State can control the goods brought from another State and offered for sale within its own limits only through a hardship on the retailer who buys them in good faith. (122-124.)

Mr. AUGUSTINE GALLAGHER, president of the Modern Miller Company, is very much in favor of a national food law governing every food, condiment, drink, and drug offered for sale for human consumption. He is satisfied that the opposition of some of the trusts and of the feed-stuff manufacturers has defeated general pure-food legislation for the last 10 years. Mr. Wedderburn has assured him that the pure-food bill was defeated in the Fifty-third Congress by the cotton-seed mill influence. (4, 186.)

2. *Label law desired.*—Professor MITCHELL, chemist to the Wisconsin dairy and food commission, thinks national laws do more than local legislation, and thinks it very desirable to have a national law compelling the marking of food substitutes for what they are. This would form a basis for legislation in the various States. Everything would be as good as the national law required, and in some States they would go a little further if they could enforce it locally. (111.)

Dr. WILEY favors a general food law requiring things to be sold for what they are. He says that the consumer pays the price, for instance, of genuine cream of tartar, but he has no protection in regard to the genuineness of the article. The city or the State can protect its own people in some degree, as many of the States are doing, but the root of the evil will not be got at until the General Government places its hands on the business. (587.)

Dr. WISE, medical inspector, United States Navy, suggests the regulation of the sale of food in the manner in which the sale of proprietary medicines is regulated in Italy. According to his account the article offered for sale bears a plain statement of its formula. Samples are gathered in the market from time

to time and carefully analyzed. If the article differs materially from the formula, the license of the dealer or vender is revoked and he is subject to fine or other punishment. (627.)

Dr. PIFFARD says wherever a mixture of two wholesome substances is offered as a pure article, this should be punished, but he would not prevent the mixing of two harmless substances if the nature of the composition were indicated. As the English law expresses it, the consumer should have a substance of the nature and kind demanded, and not some other kind. (187, 192.)

Mr. HOBBS, editor of the National Provisioner, would favor a national pure-food law which should require certain chemical purities, and should secure proper labels on packages, so that the buyer might get a correct description of his purchase. Such a law is needed, not only for the integrity of our home trade, but for the integrity of our trade abroad. (496.)

Mr. SCULLY says his company would be very glad to mark the ingredients on each package if their competitors did. In States which have no law requiring it, he thinks it would be a disadvantage to state on the cans that certain grades of maple syrup contained glucose. Retailers would object to it even at the reduced price at which it is sold. If there were a national law compelling all to publish formulas, it would be just as profitable in every way and much better than now; it would remove the element of doubt and suspicion, and people would know just what they were buying. (98, 94.)

Mr. STEWART's idea is not to prohibit the sale of adulterated goods, but to require them to be branded and sold for what they are, to prevent the dishonest cutting of prices by jobbers and retailers, many of whom sell glucose jellies at half price. The same applies to honey and baking powder. He is strongly of the opinion that goods should be branded just what they are. (79.)

Mr. FURBAY suggests a law which would operate in same way as the mixed-flour law on all classes of food. (62.)

Mr. MONRED, a dairy expert, says the most simple way to cover all food products is to require them to be branded for what they are, as in the case of flour. A national law compelling all foods to be branded would cover the situation. (65.)

Mr. P. M. HANNEY, a manufacturer of cereal foods, thinks it very beneficial to require manufacturers to put a formula on each package, as in the mixed-flour law, to which he would make no amendments. (59, 60.)

Mr. MARC DELAFONTAINE says that the requirement that the composition be stated should really apply to all kinds of mixtures. He thinks the English law requiring the label to state what is in the package is best. (281.)

Mr. ROSSATI thinks that the branding of goods made in this country in such a way as to lead the public to believe that they have been imported, or the refilling of a foreign package with a home-made article, is a fraud which the law ought to prevent. It also causes a considerable loss to the revenue by substituting home-made goods for the foreign goods which would pay import duty. (448.)

3. Prohibition desired in certain cases.—a. Injurious substances.—Mr. THURBER thinks that the correct labeling of articles and the selling of them for what they are protects the public sufficiently against paying more than goods are really worth. It is not sufficient, however, when the question relates to goods which are injurious to health. In many cases the consumer does not know whether a given article is injurious or not. This is especially true of the poorer people, who are under the greatest temptation to buy cheap articles. Scientific terms are used, which convey no clear idea to the ordinary consumer. When the consensus of scientific opinion pronounces the use of certain articles to be injurious to the health, mere publicity ought not to be relied on. The public authority ought to forbid the use of them. (581, 582.)

Dr. PIFFARD does not think that any substance whatever which is actively harmful in ordinary quantities should be permitted to be used in food in any quantity. When a mixture contains substances which are entirely harmless in gross quantities, they should be labeled as mixtures. (191.)

b. Dilutants.—Professor MITCHELL says that compounds containing materials no one would knowingly use ought to be prohibited entirely, and should not be permitted to be sold even with a formula. If a man sells a pail of adulterated pepper labeled adulterated pepper on the side in small letters, it is taken into a grocery and put under the counter or on the counter with the label toward the grocer. In Professor Mitchell's opinion the mixing of foods like flour or buckwheat middlings with foods of an entirely different class, such as condiments, should be entirely prohibited, since they add nothing to the value of the food, but are used for the purpose of reducing the strength and cheapening the product. (118, 124.)

4. Legal standards.—National commission.—Mr. LEWIS favors a national pure-food law, if properly drawn, but not one similar to the State laws. Many manu-

factors prepare their products so as to meet the varying requirements of the laws of the several States. Mr. Lewis says the advantage of a pure-food law is twofold—to prevent the marketing of injurious articles of food and to induce manufacturers to raise their standards, so that the food will be accepted in any part of the world. He says the line can not be drawn between harmful and harmless adulteration in a law, but that this should be determined by a commission of experts, for while there can be no harm in using small quantities of alum to harden cucumber pickles, there would be great harm in allowing alum to be used as a preservative instead of salted vinegar; and canned corn may require a slight amount of antiseptic to prevent it from souring. The extent to which these things should be used should be determined by a commission of experts with facilities for getting information. This commission should, at the request of any manufacturer and at his expense, appoint a custodian for the factory with authority to issue labels, numbered consecutively, to be put upon the products, the custodian to have access to all books and workings of the concern, and to be able to acquaint himself thoroughly with everything done. When in doubt he could reserve his opinion for the decision of the commission. Thus every product would go out with a certain established grade, and purchasers would know exactly what it contained. The value of canned products now depends upon the reputation of the manufacturer. Under this plan there would be a Government guarantee, which would enhance the value more than it cost. This would be of value, especially in foreign countries and in local markets where the manufacturers are not well known. The commission might also examine the requirements of foreign markets and issue bulletins of what is required. The commission should be under a department of commerce, the value of food inspection being as much to enhance the value of food abroad as to protect consumers at home. The law should be so framed that anyone should have the privilege of buying any kind of food wanted and not be compelled to take a Government guarantee, for many small manufacturers could not afford to employ a Government custodian and would be satisfied with a local reputation. The employment of the custodian should be voluntary, but goods not inspected would not bring the prices they do now. Mr. Lewis thinks that if there were sufficient confidence in the commission it would hardly be necessary to give notice of the presence of small quantities of preservatives, but baking powder containing large quantities of alum, being deleterious to the health, should be so labeled; the Government could not give its guarantee to a package of that kind if the commission should decide that alum was deleterious to the health. Mr. Lewis believes that the quality of the food eaten has as much to do with morals as the quality of literature absorbed, or even more. (36-39.)

Professor HALLBERG says that, excepting a few articles which the Government has found it necessary to fix the standard for, as in the lime test for kerosene, the polariscopic test for sugar when a bounty was to be paid, and more recently for flour, there is no standard for measuring the quality, purity, and strength of natural substances outside of pharmacy. He believes that only a national law will be sufficient. The laws in various places are often deficient, and for the most part are administered by unqualified or ignorant persons. The administration of national law must be placed under a national board of health. So many questions come up pertaining to the adulteration, sophistication, and substitution of foods that can not be settled except by scientific medical research that even the Department of Agriculture can not settle these complications. Professor Hallberg holds it absolutely necessary that there should be a national board of health, or department of health, with branches, working if necessary in conjunction with the Department of Agriculture, to settle disputed questions and fix a definite standard with certain limitations as to the quality, strength, and purity of various substances.

Professor Hallberg says that if there were a national board of health to which such questions could be referred all the trouble about such articles as canned roast beef would be avoided. (80, 81.)

Professor Hallberg is opposed to the idea that it is only necessary to state on the label the composition of the food. It would be very difficult to enforce a penalty for dishonest formulas, because organic chemistry is only in its primitive stages in this country, and very few chemists can make a correct examination of any food product. Mr. Hallberg believes that many things used in food products are deleterious to health and should be absolutely prohibited. In baking powder a statement of the formula would not be sufficient protection, because people do not know the chemical reaction that will take place in a certain mixture; and a great many things are in a similar category. Nothing short of some high authority working in conjunction with the Agricultural Department, with experts to study these questions and report to the people, and absolute prohibition of every-

thing proven beyond question to be deleterious to health, would be sufficient. He would give this authority power to make limitations, and to make rules and regulations in regard to the branding of foods, and to establish certain standards below which none should go. This principle could be extended to nearly everything. The sale of anything falling below the standard prescribed by the board should be prohibited, except possibly under certain restrictions. Deleterious things should be prohibited. He would prohibit the use of white clay in flour, and would put a limit on all antiseptics. He thinks the board should prescribe a standard strength of capsicum and designate what should be used to weaken it, as done by the Pharmacopoeia, which prescribes dilutants, chiefly sugar and milk, which have no deleterious effect. It is very hard to distinguish between what is absolutely injurious and what is not nutritious. How far the board should go in prohibiting is a matter that would have to be decided by very careful work by men of the very greatest ability who have devoted their whole lives to the subject. Having everything labeled clearly as to substance would be a step in advance, but not a great step. The label might state in the case of baking powder that it contains gypsum or plaster of paris, which many must contain, because a great deal of the cream of tartar is half gypsum; but the average housewife would not know its injurious effects. (81-87.)

Professor CHITTENDEN, professor of physiological chemistry in Yale University, says that a general law forbidding the addition of poisonous substances to food would be insufficient. It is very difficult to agree upon what constitutes a poison. Hydrochloric or muriatic acid is present in the gastric juice to the extent of 0.2 of 1 per cent, and is an indispensable agent of digestion. In concentrated form it is one of the most violent poisons. So is acetic acid, which, in a dilute form as vinegar, is one of the commonest preservatives. We can not say that all poisonous substances must be excluded from foods. We can insist upon a law which will compel the makers of food products to label them in such a way as to show the nature of the substances which have been added and the quantities. There ought to be a commission or some authority to which products could be referred, with power in such matters. Professor Chittenden thinks it desirable to fix standards of composition for food products so far as it can be done, and says the proposed commission would be of great value in that connection. (418, 419, 422, 426.)

Professor TUCKER would favor a national commission of experts to determine questions relating to the use of preservatives and adulterants. Such a commission would give us the actual facts, while legislative bodies are now likely to depend largely upon the partisan views of those who are interested in the sale of certain articles. The commission would be a guide for State legislation, and its conclusions would probably be enacted into law in the various States. Further, there would be a great saving in having one national body to conduct investigations instead of a great number of State commissions, which are likely to duplicate each other's work. (436, 438, 439.)

Dr. HENRY G. PIFFARD, of New York City, does not believe that any enactments of Congress will be sufficiently comprehensive to remedy all evils, but he believes that Congress should authorize an investigation into food products offered for sale in this country, and authorize a commission to determine what may be considered adulterants. Legislation going as far as national authority will permit should be enacted, and with this as a basis and guide the State legislatures could supplement the acts of Congress. The effective carrying out of preventive measures will rest rather with the States than with the General Government, but a great deal of legislation which Congress should enact could be copied en bloc into State legislation, with such additional measures, especially as regards penalties, as the States might see fit to enact. (187, 188.)

Professor VAUGHAN says there should undoubtedly be a national board of health, or a board devoted to the subject of foods, and declares it a disgrace to the country that there is not such a board. Aside from the question of sanitation, it would give American foods a standard value in other countries and help our exports. He thinks it would be quite impossible to fix standards for all foods, as is done for medicines. This can be done for milk, but he does not see how it can be done for bread, meat, etc. (206, 207.)

Dr. WILEY says the Department of Agriculture has for the last twenty years been devoting a large part of its time to the investigation of foods, and has a thoroughly equipped corps of scientific experts who would be ready to assist in the enforcement of a pure-food law. No other existing department being so much interested in the subject, it seems to me that under the present organization of the Government the enforcement of such a law would naturally fall to the Department of Agriculture. (39.)

Professor JENKINS thinks that legal standards for certain foods ought to be fixed, though he is not prepared to speak of the method which should be adopted. (455.)

5. *Objections to Government guaranty.*—Professor MITCHELL thinks the standards of foods ought to be fixed by Congress rather than by a board. He thinks it is not desirable for the Government to guarantee pure-food products. Food products generally should be pure, and when they are adulterated it is time for the law to step in. He does not understand that the object of pure-food laws is to permit any department of the Government to be used for the commercial advantage of any one or more firms. (124, 131, 132.)

Professor TUCKER doubts the advisability of attempts to guarantee the quality of particular products by law, so long as adulterants injurious to health are excluded. A law forbidding the sale of oleomargarine is unjust; it may be fit for Russia, but not for the United States. If a man buys a pint of olive oil for 20 cents, Professor Tucker does not know that the State is called upon to protect him against the substitution of cotton-seed oil or peanut oil. It might be proper to forbid the sale of oleomargarine as butter, and to forbid the sale of glucose as honey, and to forbid the sale of cotton oil as olive oil; but he would not consider it a matter of great importance. There are much more important matters that ought to have attention first. (437.)

6. *Brosius bill.—Regulation without taxation.*—Professor FREAR states that the Brosius bill is essentially that which has been approved by the Association of Agricultural Chemists in 1897. It was accepted in a modified form by the National Pure Food and Drug Congress in 1898, and certain modifications of it were suggested by that organization in January, 1899.

It is patterned after the English law, and prohibits the adulteration and misbranding of food products and drugs. General legislation of this character is considered preferable to any attempt to specify particular articles. Adulteration and misbranding affect practically all classes of foods and drugs, and are so manifold in device that piecemeal legislation could not furnish an adequate remedy. The Brosius bill avoids the tax feature which, if nominal in amount, is often interpreted as approval rather than disapproval of certain food substitutes, and if heavy, may prevent the introduction of valuable cheap foods. Finally, by placing executive control in offices already established, it avoids unnecessary increase of expenditure and the establishment of new political places. (526, 527.)

Oleomargarine, filled cheese, and flour are, according to Dr. WILEY, the only products concerning which there is any Federal legislation to protect the consumer and the honest producer. The laws relating to these articles, when properly enforced, give sufficient protection, but he believes that food laws should not have for their object the raising of revenue. (15.)

DIGEST OF ADDITIONAL STATEMENTS CONCERNING BAKING POWDERS.

[PREPARED BY THE INDUSTRIAL COMMISSION IN PURSUANCE OF A RESOLUTION OF THE UNITED STATES SENATE ADOPTED JANUARY 26, 1901.]

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INTRODUCTION.

By a resolution of the United States Senate passed January 26, 1901, the Industrial Commission was called upon to prepare a digest of the testimony relative to alum baking powder contained in the following publications:

Hearings before the Committee on Agriculture and Forestry, United States Senate, April 23, 1900. Washington, Government Printing Office, 1900.

Memorial of the American Baking Powder Association in the matter of bill S. 3618. Senate Document No. 303, Fifty-sixth Congress, first session.

Some Interesting Information about Baking Powders. Published by the American Baking Powder Association, 1128 Broadway, New York.

Effects on Digestion of Food Prepared by the Use of Alum Baking Powder. By E. E. Smith, M. D., Ph. D. Reprint from the New York Medical Journal, October 27, 1900. Published by American Baking Powder Association, New York.

Extracts from a Letter of Mr. Stanley Stoner, a Lawyer of Recognized High Standing in St. Louis, Mo., Richmond Chamber of Commerce, Richmond, Va.

Two other pamphlets without titles, published by the Chamber of Commerce of Richmond, Va., and dated January 2, 1901.

These pamphlets contain much testimony as to the harmless character of alum baking powder, together with some statements tending to show that all baking powders, particularly those containing cream of tartar, are injurious. They also contain criticisms upon the advertising methods of the principal cream of tartar

baking powder company and its alleged efforts to influence legislation. The hearing of April 28, 1900, was devoted chiefly to protests from various persons interested in the manufacture of alum baking powder against the proposed Senate bill 3618, introduced March 15, 1900, authorizing the Secretary of Agriculture to fix standards of food products and determine the wholesomeness or unwholesomeness of preservatives and other substances added to foods, fixing his determinations the standards before all United States courts. The chief chemist of the Department of Agriculture, defended the objects of the bill but also approved an amendment suggested by one of the protestants that the findings of the Secretary only evidence instead of binding upon the courts. The section under discussion was in the following terms:

"SEC. 7. That it shall be the duty of the Secretary of Agriculture to fix standards of food products when advisable, and to determine the wholesomeness or unwholesomeness of preservatives and other substances which are or may be added to foods, and to aid him in reaching just decisions in such matters he is to call upon the Director of the Bureau of Chemistry and the chairman of the committee on food standards of the Association of Official Agricultural Chemists, and such physicians, not less than five, as the President of the United States shall select, three of whom shall be from the Medical Departments of the Navy, and the Marine-Hospital Service, and not less than five experts selected by the Secretary of Agriculture by reason of their attainments in biological chemistry, hygiene, commerce, and manufactures, to consider standards of all food products (within the meaning of this act), and the effect of the preservatives and other substances added to food products on the health of the consumer; and when so determined and approved by the Secretary of Agriculture such standards shall guide the chemists of the Department of Agriculture in the performance of the duties imposed upon them by this act, and remain the standards before all the United States courts. It shall be the duty of the Secretary of Agriculture, either directly or through the Director of the Bureau of Chemistry and the chairman of the committee on food standards of the Association of Official Agricultural Chemists and the medical officers and other experts before mentioned, to confer with and consult, when so requested, the duly authorized representatives of all industries producing articles for which standards are to be established under the provisions of this act."

The suggested amendment provides that "when so determined and approved by the Secretary of Agriculture such standards and determinations shall guide the chemists of the Department of Agriculture in the performance of the duties imposed on them by this act, and may be used as evidence before all the United States courts."

I. COMMERCIAL ASPECTS OF THE BAKING-POWDER QUESTION

A. Various acids used in baking powder.—Mr. HIGGINS, president of the Baking Powder Association, says several acids are used to release the acid gas contained in the soda with which the acid is combined in baking powder, alum, cream of tartar, a combination of alum and phosphate, and in one case phosphate alone. The success of the only concern which uses phosphate alone is not yet known. Hitherto it has never been practicable to use phosphate as the exclusive agent. A great many manufacturers who use alum use acid also. (Senate committee, 29.)

B. Relative economy of alum baking powder.—Mr. E. L. DUDLEY, of Dudley Company, Fairport, New York, states that this is a small manufacturing town which has for 5 years been making baking powder with alum in it, and considers a healthful product. He himself travels on the road, and knows from dealing with the people of New York State that the majority of the people buy the lower-priced goods and buy them. A great many alum baking powders are put up on a 1-spoon formula; the directions call for 1 spoonful to a quart. Some alum baking powders are put up on a 2-spoon formula, calling for 2 spoonfuls to a quart of flour. All cream of tartar baking powders are put up on a 2-spoon formula, because cream of tartar is an extremely weak acid.

In the portions of the country where the consumption of baking powder is largest per capita, as in his own State and the section south of Maryland, 1-spoon baking powder is universally used, with the result that the humblest negro or poorest white man has a cheap and efficient material with which to leaven his bread. He buys a 1-pound can of baking powder for 10 cents. For Royal Baking Powder or any other 2-spoon cream of tartar baking powder he would have to pay 50 cents a pound; in some instances 40 or 45 cents, never less than 40 cents except when there is a trade war between retail grocers. The directions on the outside require 2 spoonfuls to a quart of flour, but the directions on a slip inside the can require 3 spoonfuls to a quart of flour. Taking the quantity prescribed on the outside label it requires \$1 worth of that powder to go as far as 10 cents' worth of the alum baking powder. Taking the quantity prescribed inside the can it requires \$1.50 worth, or 15 to 1. This is what has gradually injured the business of the Royal Baking Powder Company. (Senate committee, 30, 31.)

The memorial of the American Baking Powder Association asserts that the cost of leavening bread with Royal Baking Powder equals 80 per cent of the cost of the flour, while the cost of leavening bread with alum baking powder equals 8 per cent of the cost of the flour. These estimates are based upon the assertions that, first, the leavening power of 1 pound of alum baking powder is equal to the leavening power of 2 and in some cases of 3 pounds of cream of tartar baking powder, and, second, that the price of alum baking powder to the consumer is 10 cents a pound and the cost of cream of tartar baking powder is 50 cents a pound. (Memorial, pp. 4, 5.)

Mr. A. C. MORRISON, secretary and treasurer of the American Baking Powder Association, says that the price of alum baking powder is 10 cents a pound, never above 25 cents a pound, and that of cream of tartar baking powder is between 45 and 50 cents a pound. The cheapness of the alum product has made it a strong competitor, and while the alum baking-powder business has been growing enormously, the cream of tartar interest has been retrograding. (Senate committee, 15, 16.)

The Richmond Chamber of Commerce declares that the prohibition of the use of alum in baking powder would destroy 525 manufacturing plants in the United States. Moreover, it would immensely increase the cost of baking powder to the public. It is estimated that the State of Virginia alone would have to pay \$4,500,000 yearly for baking powder as compared with the present expenditure of \$300,000, and that for the United States the cost of cream of tartar baking powder would be \$150,000,000 yearly as against \$10,000,000 for alum baking powders. (Pamphlet issued by Chamber of Commerce.)

C. Number of manufacturers and amounts produced.—The memorial of the American Baking Powder Association says that the manufacture of cream of tartar baking powder began about 35 years ago, that of alum baking powder about 25 years ago, and that of phosphate powders later. There are 524 manufacturers of alum and alum phosphate powders. There are only 8 or 10 manufacturers of cream of tartar baking powders, and 3 of them are in a combination known as the Royal Baking Powder Company. This company puts out considerably over 90 per cent of the whole product of cream of tartar powder. It controls virtually all the cream of tartar manufactured in this country. Straight phosphate baking powder is made by only one firm. About 100,000,000 pounds of alum and alum phosphate powders are sold yearly in the United States, about 18,000,000 pounds of cream of tartar baking powder, and not more than 500,000 or 600,000 pounds of phosphate powder. (Memorial, pp. 3, 4, 10.)

Mr. DUNCAN EDWARDS says the alum baking powder companies of the United States produce more than 100,000,000 pounds annually, against about 18,000,000 pounds of cream of tartar powder. (Senate committee, 7.)

Mr. JAQUES estimates that about 20,000,000 pounds of cream of tartar baking powder are manufactured in the United States, of which 18,000,000 pounds, on a conservative estimate, are manufactured by the Royal Baking Powder Company and associated companies. The manufacture of powder containing alum amounts to about 100,000,000 pounds, of which the American Baking Powder Association represents about 75,000,000 pounds. The 61 members of the association include the large manufacturers; the other 450 or so are manufacturers who make the baking powder as a side line. (Senate committee, 27.)

Mr. HIGGINS and Mr. STEELE estimate that the Royal Baking Powder Company manufactures 90 per cent of the cream of tartar baking powder of this country. (Senate committee, 5, 32.)

Mr. COYNE estimates that the ratio of use of alum and cream of tartar baking powders is about 8 to 1. (Senate committee, 26.)

Mr. DAVIS states that the manufacturers of alum baking powder and alum phosphate baking powder produce fully 80 per cent of the baking powder consumed in

the United States, and the manufacturers of cream of tartar baking powder perhaps 20 per cent. The powders containing alum go to the consumer at such low prices and are so much more economical and efficient that they are in the ascendant. There were originally three cream of tartar baking powder companies—Price, Cleveland, and Royal—who built up a business of such immense proportions and such immense earnings on a small capitalization that they were consolidated, bringing in also the companies producing or refining cream of tartar, and the aggregated corporations were capitalized at \$20,000,000, \$10,000,000 preferred stock, and \$10,000,000 common stock. To pay a dividend on that stock requires about \$600,000. The alum baking powder companies do not make \$300,000 net in a year, though they supply 80 per cent of the consumption. The law of competition has worked among them so efficiently that most of them are working for the benefit of the consumer. The Royal Baking Powder Company is the only concern that does any business that amounts to anything at all in opposition to alum. (Senate committee, 25, 26.)

Hon. LEVI WELLS, State dairy and pure-food commissioner of Pennsylvania, estimates that from 60,000,000 to 100,000,000 pounds of baking powder are consumed annually in the United States, and that if the cream of tartar baking-powder people had the entire trade of the country their profits would not be less than \$20,000,000 annually. (Memorial, p. 30.)

Mr. HIGGINS says the Royal Baking Powder Company has found its business gradually dissipating, the fierce competition of the alum baking powders with their lower prices gradually taking the trade away. It asks the protection of the Government to perpetuate a condition which will enable it to increase its profits. (Senate committee, 29.)

D. Advertising methods of the Royal Baking Powder Company, and its efforts to influence legislation.—Mr. STEELE testifies that sulphate of alumina enters into the manufacture of the baking powder used by 50,000,000 people in this country. The forces at work against this industry are stupendous, sufficient to spend more than \$1,000,000 a year for a series of years in advertisements, to compel consideration of a bill to suppress the industry in every legislature in the country, and to induce one United States Senator to recommend that the industry be suppressed. The bill was passed in but one State, Missouri, where it was passed without any hearing. (Senate committee, 5.)

Mr. DUNCAN EDWARDS, in a statement on behalf of the American Baking Powder Association, says there is a great contest between the cream of tartar powders, represented by the Royal Baking Powder Company, a trust, and the various alum powders. The cream of tartar baking-powder companies, by advertising and by a skillful use of scientific testimony, really directed not against the use of alum in baking powders, but against its use as food, have created a sentiment against the use of alum in baking powders. They have done this for business purposes, in order to keep up their prices by making it appear that the use of alum is harmful and should be prohibited. (Senate Committee, 7, 8.)

Hon. LEVI WELLS says the cream of tartar baking-powder people, through skillful advertising and a vast amount of deceptive literature circulated through the press, have led the public to believe that only their powders are safe to use. (Memorial, 30.)

Mr. DUDLEY says the Royal Baking Powder Company is the only baking-powder concern whose methods are such and whose profits are so large that it can use advertising space extensively. It makes contracts almost universally with the papers inserting its advertisements that no advertisement shall be inserted in reply. The Senate Committee on Manufactures recommended that the alum baking-powder companies should be completely legislated out of business on the testimony of two chemists in the employ of the Royal Baking Powder Company. The committee took a large amount of evidence which was purely fictitious, gotten up in the interest of one great baking-powder concern. Mr. Dudley admits that some of the chemists of the alum baking-powder companies also volunteered to go before the committee. He says that the commercial aspect of using Senator Mason's committee appealed immediately to the Royal Baking Powder Company. When the committee assembled in Chicago the company instructed distributing crews to go through Illinois and other States and represent that they were under the pure-food commission of which Senator Mason was chairman and not employed by a baking-powder company. They were instructed to tell the housekeepers on whom they called that alum baking powder was injurious, that Senator Mason's committee had condemned it, and that the desirable and pure baking powders were Cleveland's, Royal, and Price's. All this was done secretly. (Senate Committee, 31, 32.)

Mr. CHARLES LATCHEM, of Wabash, Ind., says the Royal people had been using in the Wabash paper a single-column 8-inch advertisement. When his firm got

pretty well started in the manufacture of baking powder, the Royal Baking Powder Company published a double-column 8-inch advertisement, complaining against his goods, without any signature. Mr. Latchem then went to the newspaper office and wanted to advertise, but was politely told that they could not accept an advertisement; that they were bound by contract not to accept any other advertisement from a baking-powder manufacturer. The Royal Baking Powder Company does not spend a dollar in Indiana, except for one representative, while Mr. Latchem's firm employs 40 people, including 5 men on the road. (Senate committee, 29, 30.)

Mr. THOMPSON thinks the Royal Baking Powder Company has done everything it can, fair or unfair, to down its competitors. It pays so much for advertisements and reading matter that it has practically a subsidized press. It publishes not only ordinary advertisements, but reading matter without any signature, for which double rates are paid, and which delude the public into thinking that the newspaper is working for the benefit of the public health. The company also has written letters to ladies who have been using Mr. Thompson's baking powder, stating that it was an alum baking powder. Mr. Thompson says his baking powder is an acid phosphate baking powder, but of course has alum in it. (Senate Committee, 28, 29.)

The Richmond Chamber of Commerce expresses the opinion that one of the chief sources of prejudice against alum baking powder is the system of "blind advertising" inaugurated years ago by the Royal Baking Powder Company, by which articles attacking alum baking powder are published as news matter, appearing as the unbiased opinions of the newspaper, while they are in fact paid advertisements. In this connection was submitted the facsimile of a proposed contract between the Royal Baking Powder Company and the Journal-Tribune, of Knoxville, Tenn., providing that articles to be furnished by the Royal Baking Powder Company should be published "as pure straight reading—set in the same size and style of type and with the same style of heading as the pure reading adjoining—to be surrounded by pure reading and without date, mark, or anything to designate them as paid matter." The Chamber of Commerce states that newspapers are beginning to refuse to make such contracts. (Pamphlet issued by Chamber of Commerce.)

The memorial of the American Baking Powder Association declares that the Royal Baking Powder Company, in its efforts to increase its business, has resorted to "gradual and persistent deception of the public by false and libelous statements, covertly inserted as reading matter in newspapers, declaring alum baking powder to be poisonous, detrimental to health, and a wholly unworthy product, and the utilization of the public prejudice which is created by its own false statements to enact legislation prohibiting the manufacture and sale of alum baking powders."

It is also asserted that this company inserts clauses in its advertising contracts which prevent papers that have its advertisements from inserting any matter contradictory to its statements or detrimental to its interests. It is asserted that these contracts provide for the publication of pure reading matter.

In illustration of the Royal Baking Powder's advertising methods, the memorial presents the following, which is said to represent a type of advertisement that is widely distributed:

[From the Commercial-Appeal, Memphis, Tenn., January 2, 1900.]

SAID TO BE ALUM POISONING—SERIOUS CASE OF ILLNESS REPORTED FROM THE USE OF IMPURE BAKING POWDER.

[Johnstown, Pa., Tribune.]

The poisoning of the Thomas family, of Thomas Mill, Somerset County, four members of which were reported to have been made dangerously ill by impure baking powder used in making buckwheat cakes, has been further investigated.

The original can, with the remainder of the baking powder left over after mixing the cakes, was secured by Dr. Critchfield. The powder had been bought at a neighboring country store, and was one of the low-priced brands.

Dr. Critchfield said that the patients had the symptoms of alum poisoning. As the same kind of baking powder is sold in many city groceries as well as country stores, Dr. Critchfield thought it important that a chemical examination should be made to determine its ingredients. He therefore transferred the package of powder to Dr. Schill, of this city, for analysis. Dr. Schill's report is as follows:

"I certify that I have examined chemically the sample of * * * baking powder forwarded to me by Dr. Critchfield. The specimen contained alum."

"Dr. FRANCIS SCHILL, Jr., *Analyst.*"

Alum is used in the manufacture of the lower-priced baking powders. It is a mineral poison, and for this reason the sale of baking powders containing it is in many cities prohibited.

Several quotations from other papers are given in which this case of poisoning by alum baking powder is referred to upon the authority of the Tribune. All of them are alleged to be paid advertisements of the Baking Powder Company.

The following affidavits are offered, together with others of similar proof of the falsity of the statements made in these advertisements and deliberate manufacture of false statements and the procurement of their publication by the agents of the Royal Baking Powder Company:

Personally appeared before me J. B. Critchfield, who deposes and says as follows:

That I am the doctor who attended the Thomas family who were poisoned some time ago.

The statements and advertisements of the Royal Baking Powder Company that I stated the Thomas family were poisoned by alum in baking powder is false. I never made such statement.

Mr. La Fetra, the agent of the Royal Baking Powder Company, called on me if I would state that the poisoning was alum poisoning, and I told him I would not.

They have in their advertisement misquoted me and have made false statements in matter, as the symptoms were arsenical poisoning and not alum.

J. B. CRITCHFIELD

APRIL 20, 1900.

Personally appeared before me Francis Schill, Jr., who, being duly sworn, deposes and says:

I, Dr. F. Schill, Jr., am the physician who examined the baking powder brought to Critchfield by Mr. La Fetra, of the Royal Baking Powder Company, which was said to be the cause of the poisoning of the Thomas family. At his request I examined it for alum only, which contained. He wished me to sign a statement that in my estimation alum baking powder contained symptoms such as obtained in the Thomas family. This I refused to do. He wished also to have his name or his companies to be excluded from my statement. Not by direct implication or innuendo, they have placed me in a false position, leading the public to infer that I went so far as to say such alum baking powders were injurious to health and had caused the poisoning of the Thomas family. This latter I emphatically deny.

DR. FRANCIS SCHILL, JR.

Subscribed and sworn to before me this 20th day of April, 1900.

[SEAL.]

EDW. E. LEVINE

Alderman, City of Johnstown, Cambria Co.

The memorial also states that Dr. Critchfield and Dr. Schill tried to have the statement of the facts inserted in the newspapers of Johnstown, "and were refused to publish the same, stating that on account of a contract they had with the Royal Baking Powder Company they could publish nothing of this kind for them."

Among other alleged advertisements, one is taken from the Standard of March 24, 1900, of which the following is a paragraph:

"The Johnstown, Pa., Tribune reports four cases of poisoning near Johnstown, Pa., from the use of a baking powder which, when analyzed, was found to contain alum. Recently in New York two deaths occurred from poisoning by powders sent to victims in samples."

Upon this the Memorial makes the following comment:

"The only two deaths from poisoning by powder to which this sentence refers are apparently those of Barnett and Mrs. Adams, for which Molineux was convicted. The powders alleged to have been used were known and known to be baking powders. These, of course, are not baking powders."

A considerable number of other examples of matter alleged to have been published in various newspapers as reading matter, by procurement of the Royal Baking Powder Company, are given.

The Memorial also alludes to a house-to-house campaign against alum baking powders, which the Royal Company is said to have inaugurated. A quotation is made from the Daily Democrat, of Sherman, Tex., dated September 2, 1900, in which it is said that "M. Wemple, of New York City, representative of the National Pure Food Association," with eight women assistants, was in Sherman for the purpose of inspecting baking powders used in Sherman houses. Wemple is quoted as having made the following statement to a Democrat:

"The ladies will call at every house in Sherman, and, with the consent of the lady of the house, will inspect the baking powders used and show which contain alum and which are made of cream of tartar. We represent no particular powder firm nor do we use or recommend the use of any particular baking powder. We simply desire to demonstrate which powders are pure and which are not."

Affidavits of women are also presented, stating that they have been engaged in this work. One swears that she was employed by "the Pure Food Association of Iowa, or the National Pure Food Association, under the supervision of Senator Mason, of Chicago." Three others, signing one affidavit, say: "Mr. Mason instructed us to use the name of Senator William E. Mason in connection with the Pure Food Commission, in order to enable us to gain admission while employed by the Royal Baking Powder Company, to condemn all other baking powders."

Mr. WILLIAM T. BIGGS states in an affidavit that he was employed by the Royal Baking Powder Company at \$100 a month as "manager of a demonstrating crew." He was instructed to report to Mr. Mark Wemple. Mr. Wemple told him "that they did not wish the public to know that the Royal Baking Powder Company was doing this work, on account of the prejudice against trusts, and that in order to gain admittance to houses we were to have our demonstrators tell the housekeeper that 'We are not representing any particular brand of baking powder, but are working under the auspices of the National Pure Food Commission, of which Senator William E. Mason is chairman.'"

Another phase of the activity of the Royal Baking Powder Company is asserted in the Memorial to be procurement of legislation against alum baking powders. A bill was passed in Missouri prohibiting the manufacture or sale of any article that contains alum and is to be used in the preparation of food. The passage of this bill is referred to as clandestine, and it is said that none of the 31 manufacturers of alum baking powders in Missouri was given notice of any hearing, or knew of its passage until they had been legislated out of business. Similar bills were introduced in Georgia, Virginia, Mississippi, New Jersey, and New York, but were defeated as soon their character became known.

Under the Missouri law a case was brought against a dealer, and it is asserted by the Memorial that each of the 10 witnesses for the prosecution testified that he appeared at the request of the Royal Baking Powder Company and that he was paid for his appearance; at least two of them at \$100 a day and expenses, and at least one at \$50 a day and expenses. The case for the prosecution, though nominally conducted by the State, was really conducted by an able attorney of St. Louis, in the employ and pay of the Royal Baking Powder Company. "At this trial the astonishing fact was also elicited that the article on the physiological effects of hydrate of alumina, published in the Chemical News, of London, by Professor Mallet, and which has been supposed to be in every way an independent, disinterested, and purely scientific piece of work, had been undertaken at the suggestion of Mr. Hoagland, of the Royal Baking Powder Company, and paid for by that company." (Memorial, 5-23, 43-45.)

The Richmond Chamber of Commerce publishes two letters from lawyers of St. Louis, Stanley Stoner and James A. Seddon, both of whom were engaged in defending the suits brought to enforce the Missouri law against alum baking powders. These letters declare that the law referred to was passed hastily, and without opportunity for opposition by the alum baking powder interests. The bill was introduced and carried by a lobbyist. It associated alum with arsenic, calomel, and bismuth, none of which was ever used in the preparation of food. As first introduced the bill included a prohibition upon the use of potash, but this was struck out in the privacy of the senate committee and ammonia was substituted, the evident reason being that cream of tartar contains potash.

The alum baking powder companies arranged to have a test case brought under the law. It was found that the Royal Baking Powder Company employed attorneys to prosecute the case, and that the State was represented, not by its own officers, but by these attorneys. It was further developed that all of the 11 expert witnesses who testified against alum baking powder were paid at the rate of from \$50 to \$100 per day and expenses by the Royal Baking Powder Company, as they admitted on cross-examination. Two of them admitted also that they were paid when they testified before the senate committee on manufactures.

Much evidence was submitted to show that alum baking powder was harmless, and the judge declared in his opinion his belief that it was harmless, but nevertheless felt that under previous decisions of the supreme court of the State the judiciary had no right to interfere with the discretion of the legislative branch of the government, and must accordingly enforce the law. An appeal was taken from this decision to the supreme court, which had not yet been decided at the time of this correspondence. (Letters published by Richmond Chamber of Commerce.)

Mr. MORRISON states that the cream of tartar baking powder people succeeded in passing a law in Missouri which would throw 31 alum factories out of business. The bill was passed without the knowledge of the alum baking powder manufacturers. Since that time every legislature which has met has had the bill presented to it, but the American Baking Powder Association has always shown its purpose, and has in every case been successful in defeating it. In the Virginia pure food law a provision was inserted that alum baking powder should be excluded from the operation of the law. (Senate committee, 16.)

Mr. UDELL says the animus behind every bill introduced into State legislatures, so far as he knows, has been to strike down industries not controlled by the Baking Powder Trust. (Senate committee, 12.)

The Memorial of the American Baking Powder Association says: "Professor Prescott stated, under oath, in *The State of Missouri v. Whitney Layton*, that he was asked to testify before Senator Mason's committee by Dr. McMurtie, chemist of the Royal Baking Powder Company, and he could not afford to leave his duties unless he received his compensation of \$100 a day and expenses. Senator Mason, however, states (p. 195) that he sent for Professor Prescott because he heard that he was in the city. He also admitted that for appearing as an expert witness for the prosecution in *The State of Missouri v. Whitney Layton* he was paid \$100 a day and expenses by the Royal Baking Powder Company. And further, that he had not himself made any experiments or conducted any experimental work on bread made with alum baking powder."

"Prof. Victor C. Vaughan, who testified before Senator Mason's Pure Food Committee, also stated, under oath, in *The State of Missouri v. Whitney Layton*, he was told by Professor Prescott that Dr. McMurtie (chemist of the Royal Baking Powder Company) wanted him to testify before that committee, and that his compensation (\$100 a day) and expenses were paid in the same manner as Professor Prescott's (i. e., by the Royal Baking Powder Company). Professor Vaughan also admitted that he received \$100 a day and expenses from the Royal Baking Powder Company for giving expert testimony for the prosecution in *The State of Missouri v. Whitney Layton*."

"Prof. J. W. Mallet (p. 549) testified at great length and introduces in full an article published in the *Chemical News*, of London. Professor Mallet admitted, under oath, in the Missouri case that a part of the work included in this article was done at the request of Mr. Hoagland, of the Royal Baking Powder Company, and paid for by him. He also stated that he was paid by the Royal Baking Powder Company for testifying on the side of the prosecution in the St. Louis case \$50 a day expenses and \$250 for special work. Professor Mallet also stated, under oath, before the Mason committee (p. 550) that in appearing before that committee he did not represent any manufacturer whatever. Professor Mallet swore in the St. Louis case that he had not done any experimental work on the physiological effects of alum baking powder residues since 1888, so that his testimony given before the Mason committee is practically a reiteration of the work paid for by Mr. Hoagland, of the Royal Baking Powder Company, and published in the *Chemical News*, of London. This article is printed in full in the Mason report (p. 557). No allusion, however, is made to the connection between this article and the Royal Baking Powder Company, which is natural enough, in view of Professor Mallet's statement that he did not represent any manufacturer, nor was he interested in the manufacture or sale of any baking powder." (Memorial, 43-46.)

The Richmond Chamber of Commerce, after its investigation of alum baking powder, declares its opinion that the conclusions of the Senate Committee on Manufactures as regards baking powder were based on ex parte testimony, chiefly delivered by chemists in the pay of the Royal Baking Powder Company, as proved by evidence before the courts of Missouri in *State of Missouri v. Layton*. The fact that Senator Mason stated on the floor of the Senate that he could recall no testimony showing that cream of tartar baking powder left Rochelle salts in bread is evidence, in the opinion of the chamber of commerce, that the investigation was one-sided, since this effect of alum baking powder is well known. Over against these conclusions the committee puts the opinion of Judge Clark in the above case, based upon a full hearing of both sides of the question, that alum baking powder is harmless. (Pamphlet issued by chamber of commerce.)

E. Alum baking powder not controlled by a trust.—Mr. A. C. MORRISON, secretary and treasurer of the American Baking Powder Association, says that this association was formed as a result of the attack on the alum baking powder industry, which awakened manufacturers to the necessity of uniting. The association is not formed for controlling prices or competition, but for defense against the attacks of a single well-equipped organization. It consists of 61 members, who manufacture 75,000,000 pounds of baking powder, or 75 per cent of all the alum baking powder sold. (Senate committee, 16.)

Mr. DAVIS states that the American Baking Powder Association represents 75 per cent of the output of alum and alum phosphate baking powders; that there is no combination in effect or contemplated as to prices, and that the association would not be in existence except for the aggressive and, as some of the members think, disreputable methods of their chief competitor in the cream of tartar baking powder business. (Senate committee, 26.)

Mr. J. J. HIGGINS, president of the American Baking Powder Association, confirms the statement that this association, which is composed of alum baking powder manufacturers, is organized not for the regulation of prices or of trade, but for defense against the aggressive attacks of an antagonistic interest. (Senate committee, 18.)

II. PHYSIOLOGICAL EFFECTS OF BAKING POWDERS.

A. Alum baking powder not injurious.—The Memorial of the American Baking Powder Association presents a series of medical and scientific opinions to the effect that bread prepared with alum baking powder is an entirely wholesome food. Extracts are given from the testimony of Prof. Austin Flint and Dr. Ernest E. Smith in the Missouri baking-powder case. This testimony was based upon an elaborate series of experiments. Opinions of the character referred to are quoted from Dr. Charles B. Parker, professor of physiology in the medical department of the Western Reserve University, from Dr. J. B. Sawyer, professor in the medical department of the Western Reserve University, from Dr. Henry W. Rogers, professor of *materia medica* and therapeutics in the Western Reserve University, and from Dr. Tuckerman and Dr. J. R. Smith, of Cleveland.

The following sentence is quoted from the decision of the presiding judge in the Norfolk, England, baking-powder case: "After the evidence we have just heard, I do not think bread made from this baking powder becomes an article of food injurious to health."

Hon. Levi Wells, State dairy and pure-food commissioner of Pennsylvania, is quoted as saying: "I do not hesitate to express my belief that, so far as healthfulness is concerned, the cheaper alum and alum-phosphate powders are no more objectionable than are the cream of tartar powders."

From the annual report of the Pennsylvania department of agriculture, 1896, similar statements are quoted. This report says: "A careful study of the question leads to the conclusion that a properly compounded alum powder will perform all the desired requirements and is no more harmful than the powders costing four or five times as much."

From "a report of elaborate experiments on digestion" by Prof. R. Ogden Doremus, professor of chemistry and toxicology in the Bellevue Hospital Medical College, New York, and Prof. Charles A. Doremus, professor of chemistry and toxicology in the University of Buffalo (medical department) these statements are taken:

"Alum and hydrate of alumina produce scarcely any more retarding effect on the digestion than common salt, and by no means as great a retarding action as did the Rochelle salts (from a cream of tartar baking powder).

"Further experiments on human subjects, by feeding large quantities of hydrate and phosphate of alumina at meal times, prove no ill effects. * * * All baking powders leave residues in the bread. * * *

"As to quantities, alum baking powder leaves the least. * * * Baking powders (cream of tartar) which leave residues of potash, according to a prevailing sentiment among medical men, are more objectionable, leaving a double tartrate of potash and soda or Rochelle salts. * * * One of the best physiological proofs that the residues of alum powders are not injurious is that many intelligent families, aware of the composition of these powders, have used them for many years without injurious effect. * * * Even the salt of alumina is in constant use as a domestic medicine; it is largely employed in the arts without toxic effect resulting, and the alum springs of Virginia, also of Europe, are favorite resorts for hygienic purposes."

The following is from an article in the *Scientific American Supplement*, No. 185, by Prof. G. E. Patrick, professor of chemistry in the University of Kansas, detailing a series of experiments which Professor Patrick had carried on during the preceding two months: "It seems to me established, as well by experiment as by reason, that a properly made alum baking powder, used in making bread or biscuits, is perfectly harmless to the human system. * * * In closing, allow me to say, in order to prevent all suspicion, that this investigation was undertaken for the sole purpose of finding out the facts in this matter—one of so great importance to us all; that no party or parties interested in the sale or manufacture of baking powder had any knowledge of the investigation, and that I have received no remuneration for it or for this article."

George Holland, M. D., is quoted as saying in the *Pharmaceutical Record*, April 1, 1887, that the experiments of Francis Sutton, one of the most skillful analysts of the day, in connection with the Norfolk, England, baking-powder case, and of Professor Patrick, "furnish positive proof that the very small amount of hydrate of alumina left in the bread by the use of alum baking-powder is not dissolved by the gastric juice in the stomach of living animals, and is, therefore, harmless."

An article by C. V. Petraeus in the *Pharmaceutical Record* of June 1, 1888, is quoted, as follows: "An alum baking powder does not deteriorate in a package like a cream of tartar powder—its keeping ability is far above the latter. * * *

Alum sets free the gas from bicarbonate of soda slowly and with greater regularity than cream of tartar, and therefore does much better and more effective work. * * * Alum baking powders * * * are the best, not only because a given quantity will raise more bread than the same quantity of cream of tartar baking powder, but because of the small quantity and innocent character of the residue they leave in the bread." (Memorial, pp. 29-32; these same quotations are mostly reproduced in the pamphlet, Some Interesting Information about Baking Powders, published by the American Baking Powder Association.)

The memorial also refers to the testimony taken in the Missouri alum baking powder case (*State v. Layton*), in which men who had worked in alum factories for 13, 16, and 20 years, respectively, grinding exsiccated alum, stated that their long and constant exposure to alum dust had done them no harm. Their appearance was perfectly healthy, and their records showed that for 2 or 3 years at a time they had not missed a day. Similar evidence was given by persons who worked in alum baking powder factories and who were in like manner constantly exposed to the dust of alum.

The judge before whom this case was tried used the following language in his decision:

"It was not proven in evidence that there were any instances in the use of alum baking powders which resulted in the leaving in the food product any free alum—that is, in its original form. Some experiments showed that alum in some form, whether in its original shape or as a compound, in combination with other substances, did exist in the resulting product. It is to be noted that in every instance the quantity of alum or alum compounds found by analysis in the resulting food products was extremely small and far below the limit fixed by experiment as being a quantity sufficient to produce appreciable effects upon the individual using the food product in any quantity, such as would be obtained in its use as food—such as would be obtained in practice.

"Upon cross-examination the experts testifying for the prosecution admitted that in all their experience and in all their reading and information that they possessed on the subject they had never themselves come in contact with, nor could they obtain, any information or any knowledge of any recorded instances in which functional disorders or disease or impairment of the digestion and general health had resulted to any human being from the use of alum baking powder as an ingredient in the preparation of food.

"In the mind of the court this fact, considering the enormous proportions to which the alum baking-powder industry has grown in this country and the length of time in which such baking powders have been in use, stands as a stone wall against the deductions of the most eminent scientists who presented their theories on the part of the prosecution. I am unable to find in the evidence in this case any just ground for a ruling that alum baking powders, of themselves, when used in the preparation of food, are in anywise less wholesome than any other variety of baking powders." (Memorial, 36, 37.)

The memorial of the American Baking Powder Association declares that there is never more alum used in alum baking powder than is necessary to release the gas; for alum is the expensive ingredient and a manufacturer would not naturally use more than is needed. (Memorial, 3.)

The letters (published by the Richmond Chamber of Commerce) from Mr. STONER and Mr. SEDDON, attorneys for the defense in the case of *State v. Layton* brought to enforce the alum baking-powder law in Missouri, declare further that the defendant introduced many witnesses to show the healthfulness of alum baking powders. Among these were boarding house and hotel keepers who had used these baking powders for years, manufacturers and sellers who had made and sold them for years, and leading physicians who had used them in their families. The defendant also secured Dr. Austin Flint and Dr. E. E. Smith, of New York, to conduct a series of experiments (elsewhere described) as to the actual physiological results of the use of alum baking powder. Professor Keiser, of Washington University, St. Louis, also testified in the defense. These lawyers declare that the evidence of all these witnesses demonstrated beyond doubt that alum baking powders had been in use for many years, that fully 120,000,000 pounds are used yearly, and that they had proved entirely acceptable to consumers and were a standard article like sugar or flour.

It was further shown that no alum remains in the bread. No witness for the prosecution could testify that he ever heard of a single case of derangement of the human system attributed to the use of alum baking powder. The witnesses simply declared that alum was not a natural food product and that its injurious effects when taken in small doses would depend upon the question whether it was taken into circulation or was eliminated from the system, a question as to which they had conducted no experiments to determine the answer.

Dr. PETER T. AUSTEN stated before the Senate committee that the alum used in baking powder is a calcined or exsiccated alum, a white powder which is only partly soluble in water and has not the sharp astringent taste of ordinary alum. Bicarbonate of soda is mixed with exsiccated alum and a neutral filler, such as starch. In bread making carbonic-acid gas is set free gradually, and the bread is made porous and digestible. The baking powder is entirely decomposed, leaving a certain amount of sodium sulphate, which is a very common substance and a natural constituent of foods, and hydrate of alumina. Professor Smith and Dr. Flint concluded from their experiments that they could find absolutely no difference in physiological effect between bread made with alum baking powder and normal bread in which the residuum was only common salt. The people of this country use 100,000,000 pounds of alum baking powder a year, and ample investigation has failed to find any deleterious effect. Very eminent authorities are very strongly in favor of the use of alum baking powder, and state that they use it in their own families. There is no positive evidence against its use. (Senate committee, 13, 14.)

Dr. Austen, testifying before the judiciary committee of the Georgia legislature said, in addition to the above statements, that it is a mistake to suppose that alum used in baking powder remains in the bread as alum. Hydrate of alumina is believed by most recent authorities to be insoluble in the digestive juices and to pass from the body as inert matter. No proof has been adduced to show that either of these residual products of alum baking powder has any injurious effect. Dr. Austen declares that the inclusion of alum with arsenic and calomel, which are admitted to be poisonous, indicates ignorance or intention to mislead. There is no ground for considering alum as poisonous, although almost any article will produce death if taken in large enough quantities. Alum is often prescribed by physicians in doses of from 10 to 20 grains. Powdered alum is often blown into the throat for the treatment of relaxed membranes. No proof has been adduced by any experiment that the residual product of alum baking powder in bread produces harmful effects.

Dr. Austen quotes Dr. Sutton, public analyst for Norfolk (England) and other places, to the effect that all kinds of flour contain a small amount of alumina, so that it would be necessary in judging the effect of alum baking powder to determine how much of the alumina in the bread comes from the baking powder and how much from the flour. In Dr. Sutton's opinion alumina is not injurious to health.

The witness also quotes the following authorities to the effect that alum baking powder is not injurious to health, giving in most cases brief extracts from the language of the authorities: Dr. J. L. W. Thudicum, F. C. P., Lond., F. C. S.; Dr. Petraeus; A. Wynter Blythe; Dr. B. Ward Richardson, an eminent English sanitarian; Dr. Beverly, assistant surgeon to the Norfolk (England) and Norwich Hospital; Dr. C. M. Tidy, professor of chemistry and forensic medicine at the London Hospital; Professor Patrick, of the University of Kansas.

Dr. Austen also quotes from Dr. Henry Froehling, of Richmond, Va., who wrote in answer to a request from the commissioner of agriculture of Virginia, as follows: "From my experiments, carefully made, a well-compounded baking powder with alum as an ingredient, in the recognized proportions, is as harmless as the best cream-of-tartar powder; indeed it is less harmful, as the cream-of-tartar powder leaves in the bread a large residue of tartrate of potash and soda (Rochelle salts). I find that well-compounded baking powder, with alum as an ingredient, gives a leavening effect fully equal to the high-priced baking powders costing 4 or 5 times as much."

The witness also points out that alum is regularly used in Atlanta and other cities in Georgia for purifying the public water supply. The chemical reaction by which this process is accomplished is very similar to that taking place in bread raised with alum baking powder. The hydrate of alumina which is produced is removed by filtration and is not actually drunk. In the same way the alumina in the bread does not pass into the system at all. (Pamphlet entitled "Some interesting information about baking powders," pp. 1-8.)

The Richmond Chamber of Commerce not only cites testimony elsewhere digested in this report, but also local testimony. Thus, Dr. Hunter McGuire, who is said to have stood in the foremost rank of his profession, declared his full concurrence in the opinion that there is nothing injurious in alum baking powder, adding that he permitted its use in his own house and in his hospital. Fifty-one physicians of Richmond also testified that in all their experience they had never had a patient whose diseased condition of the digestive system could be attributed wholly or in part to the use of alum baking powder in food, and that they never knew a case of functional disorder as a result of the use of such powder. This statement is made in the face of the fact that fully 98 per cent of the baking powder used in Richmond is alum baking powder. The Chamber of Commerce

also points out that there has been a remarkable decrease in the death rate of Richmond during the last 8 years, concurrently with the enormous increase in the consumption of alum baking powders, and that there has also been a marked decrease in the death rate of the United States.

It is added, further, that the daily habits of the people afford the safest test of healthfulness. The people who from day to day perform practical physiological experiments without preconceived notions of the results afford evidence more satisfactory than the opinions of chemists. The result of this test is a vindication of alum baking powders. (Pamphlet issued by Chamber of Commerce.)

Mr. EDWARD refers to the practical experience of millions of people who are daily using alum baking powder without evil effects, and also to a series of physiological experiments conducted for the Missouri case, and to be further extended, which he predicts will show conclusively that alum in baking powder is absolutely harmless. He explains that the alum is used merely to release the gas, and says no alum is left in the food, the residuum being hydrate of alumina, which is harmless. (Senate committee, 8.)

Mr. JOHN DAVIS, president of the Detroit Chemical Works, states that he began in 1868 with the manufacture of cream of tartar baking powder, but with a view to economy turned to baking powder containing alum. After his business was destroyed by an explosion he continued only the manufacture of the acid chemicals used. He has studied the subject, and resolved to produce nothing that would be injurious. He has used alum baking powder in his own family for 25 years. He says the only denial of the healthfulness of alum baking powder comes from the Royal Baking Powder Company or its employed men, who receive a money value for their testimony, and from cranks. (Senate committee, 19, 20.)

Hon. R. W. TAYLER, member of Congress from Ohio, states that he has constituents who manufacture alum baking powder at Canton, Ohio, and have been doing so for a great many years. They are ready, if necessary, to present cumulative evidence that their product is pure and innocuous, a promoter of health rather than a menace to it. (Senate committee, 17.)

Mr. HOOVER COYNE, manager of the Sea-Gull Specialty Company of Baltimore, Md., says that this company, which is in no way connected with any trust, manufactures an alum baking powder which has been analyzed and indorsed by the State chemist and by the chemist of the city health department. Mr. Coyne has been engaged in the sale and manufacture of alum baking powder for 19 years; he has been eating biscuits made from alum baking powder about that length of time, and his health is very good. (Senate committee, 26.)

Mr. R. B. DAVIS says he produces annually up into the millions of pounds of baking powder in which there is a small proportion of alum. He formerly manufactured cream of tartar baking powder, but caused physiological examinations to be made of the alum product, and began the manufacture of alum baking powder purely on physiological grounds. (Senate committee, 24.)

Mr. F. J. ACH, of Dayton, Ohio, states that he has for more than 20 years been engaged in the manufacture of alum baking powder, and during all that time has used no other baking powder in his own household but the product he manufactures, containing alum as its principal constituent. During that time he has developed from a rather dyspeptically inclined stripling to a perfectly healthy state, and has reared a family which has never encountered anything more serious than the measles or the mumps. The young women in his employ have never shown any symptoms of ill health beyond a normal amount, though they necessarily inhale more or less of the dust of the powder in the process of canning and labeling. About half a dozen have been employed more than 10 years, and one for 20 years. He has done business under the administration of three State food commissioners, and has conformed exactly to the regulations of Ohio. The question has come up a number of times, and he has always been able to demonstrate the harmlessness of his baking powder. (Senate committee, 23, 24.)

Dr. W. B. D. PENNIMAN, chemist of the Maryland State board of health, states that under the law of Maryland he can be called upon by any physician to investigate any matter which he thinks affects the health of his patients, and it is also his duty to look into any case of suspected poisoning; but he has never had a case of suspected poisoning where he found any harm in the baking powder, or in which a physician thought that baking powder was the possible cause of sickness, although hundreds of cases have been brought before him. He has examined many samples of baking powders and their constituents, and has never seen a sample containing any ingredient which is recognized as a poison. Dr. Penniman says there is no evidence to show that any individual was ever injured by either alum or tartrate baking powder, but what little evidence there is would seem to show that the Rochelle salts formed by cream of tartar powders have a more active medicinal effect than the hydroxide left by the alum. There is no excess

of alum in ordinary baking powder over the amount which will combine with the sodium bicarbonate, because it costs more than any other single ingredient of the powder. (Senate committee, 20-22.)

Mr. STEELE says there is no epidemic prevailing among the consumers of alum baking powders. He submits an extract from the decision of the court in a Missouri case, elsewhere quoted. (Senate committee, 5, 6. See also Udell, 12; Austen, 14.)

Mr. CHARLES E. JAQUES, of Chicago, has been engaged for 12 or 15 years in the manufacture of alum baking powder, and has yet to hear of the first instance of any one being made sick by its use. (Senate committee, 27.)

Mr. F. E. UDELL states that the Provident Chemical Works of St. Louis have for more than 20 years manufactured powdered acid phosphate of calcium, which is used in combination with alum in the manufacture of baking powder. It can not be used alone, on account of its acting too quickly when combined with soda, and hence not keeping the requisite time. He says this acid phosphate is recognized as the most healthful acid that can be used in the compounding of foods. Some 300 or 400 manufacturers of baking powders in the United States are customers of his company. Mr. Udell believes it more healthful for use in baking powders than cream of tartar; he has used it in his own family for years. The hydrate of alumina occurs in bread in a quantity so infinitesimally small that even though a man were to eat a whole loaf of bread it could not possibly injure him. Professor Mallet testified that he had experimented upon himself, and that he took 20 grains of hydrate or hydroxide of alumina before there was any perceptible effect. In a whole loaf of bread there are only 12 grains. It was further brought out by the experts on both sides that in all the samples of bread made with alum baking powder there was not a particle of alum left in the bread. (Senate committee, 11-18.)

Mr. GEO. A. THOMPSON of Cincinnati says that he uses alum baking powder at home; that it is used in hospitals, physicians' families, in all kinds of private families, and in restaurants, and that no one has ever been injured by it. He himself makes his baking powder, so that he breathes it and is covered with it, and for 54 years he has never lost a day on account of illness. (Senate committee, 28.)

B. Physiological experiments of Dr. Smith and Professor Flint.—Dr. E. E. SMITH of New York, in the New York Medical Journal of October 27, 1900, publishes the results of certain experiments made by himself and Professor Austin Flint as to the effect of alum baking powder upon digestion. He says that opinions as to the effect of such baking powder are usually based upon the judgment as to whether the alumina into which the alum is converted is soluble or insoluble. The harmfulness is supposed to come from the solubility of the salts of alumina and its consequent absorption into the system.

The experiments referred to were made with bread leavened with alum baking powder, in comparison with bread made in precisely the same way but with bicarbonate of soda and hydrochloric acid for leavening. Two healthy men were given 60 grams of the alum baking-powder bread for breakfast, and 4 days later an equal quantity of the other bread. The contents of the stomach were examined in each case for acid and pepsin, with the following results:

	Baking-powder bread.	Control bread.
Subject I:		
Total acidity, as HCl .....	.0251	0.238
Total hydrochloric acid.....	.215	.222
Combined hydrochloric acid .....	.143	.186
Free hydrochloric acid .....	.072	.066
Pepsin test.....	1 hour.	1½ hours.
Subject R:		
Total acidity, as HCl .....	.0220	0.221
Total hydrochloric acid.....	.215	.200
Free hydrochloric acid .....	.070	.069
Combined hydrochloric acid .....	.145	.131
Pepsin test.....	1½ hours.	1½ hours.

Dr. Smith thinks that these results are negative and the slight differences are rather the inevitable variation in all physiological experiments than the effects of the different methods of leavening the bread. He considers that the conditions of the experiment were fair. The limited amount of material available did not permit of a quantitative estimate of the amount of pepsin in the stomach.

A more elaborate experiment was conducted to ascertain the availability of the food elements of the two kinds of bread. A healthy man was given a diet consisting of bread made with alum baking powder, meat, milk, and butter. The bread constituted 64.6 per cent of the solids eaten. This diet was continued for 3 days. At a later time the same person was given precisely the same diet in quantity and quality, except that the bread was made as above indicated. The result of the experiment as determined by careful weighing of the constituents of the faeces during the respective periods is as follows:

	Solids.	Protein.	Fat.	Carbo-hydrates
Faeces, period 1.....	4.08	9.1	5.37	1.95
Faeces, period 2.....	4.1	10.1	5.6	1.6
Diet available, period 1.....	96.9	90.9	94.58	98.05
Diet available, period 2	96.9	89.9	94.4	98.4

Dr. Smith concludes from these results as follows: "It is thus found that the availabilities of the diet in the two periods are practically identical, agreeing as closely, in fact, as can be expected of duplicate experiments on precisely the same diet."

The composition of the urine during the two periods was also determined, to indicate the amount of nitrogenous waste and the amount of the products of putrefaction formed by the intestines and absorbed. The results were so nearly the same as to indicate no greater degree of the putrefactive process in the one case than in the other.

"In conclusion, then, the evidence of these experiments is that food prepared by the use of a so-called alum baking powder does not interfere with secretion in the stomach, and, even when it makes up the major part of the diet, it is utilized by the body in the same way and to the same extent as an acceptable control diet. The investigation does not reveal any reason for believing such food at all injurious or unwholesome."

Referring to the experiments of Professor Flint, Professor P. T. Austen, and Dr. Smith, the memorial of the American Baking Powder Association says: "As these experiments are the only ones that have been conducted on human beings, in which the most modern means of investigation have been applied, they conclusively prove that the effect of hydrate of alumina is entirely negative, neutral, and that therefore bread made with alum baking powder, which leaves hydrate of alumina as the residue, is as wholesome and nutritious as the Liebig ideal bread."

C. Replies to witnesses against alum baking powder.—The memorial of the American Baking Powder Association presents an answer to each of the witnesses who testified against alum baking powder before the Senate Committee on Manufactures. Only a few of these answers are referred to separately in the following paragraphs. The memorial declares that there was a great amount of learned talk and a great amount of expression of opinion, but that no one knows of a specific case of injury to health by the use of food prepared with alum baking powders. It is also declared that the attempt is very adroitly made in some of the questions and answers to apply to food made with alum baking powder the information given about alum. It is pointed out that eating alum and eating bread made with alum baking powder are entirely different and distinct matters. "In the former case one eats alum, and in the latter one doesn't."

It is suggested that Professor Prescott's remark about astringents and precipitants (page 35 of Digest) can be applied as well to other articles of food, such as coffee and tea (both of which contain tannin, the astringent par excellence), many fruits, nuts, wines, etc.

"Professor Vaughan testified that he had never conducted any experiments with bread cooked with alum baking powder, or eaten it, or fed it to others for the purpose of seeing what effect it would have upon the health and the digestion. He also swore that it would be impossible to tell what the effects of food prepared with alum baking powder would be upon persons of normal health, and that during 25 years of reading, practice, and experience he has never seen any ill effects traceable to the use of alum baking powder, and further that his opinion as to the deleterious effects of the use of alum baking powder was based upon theoretical propositions, and not upon cases that had come under his individual observation or which were recorded in books.

"This is another luminous example of the overwhelming mass of testimony antagonistic to the use of alum in baking powder which fills the Mason report. Professor Vaughan does not state that he has ever found unchanged alum in bread made with alum baking powder; he does not even claim that the amount of bread eaten at a single meal could possibly contain 5 grains of alum, or if it did that one could eat that amount of alum in 3 or 4 slices of bread without detecting the taste of alum, and hence rejecting the bread."

Of many other witnesses the memorial declares, in its criticisms of their individual testimony, that their statements are indefinite and are not based upon experimental knowledge or exact knowledge of any kind, and that they merely express opinions without indicating any basis for their opinions which would entitle them to serious weight. Attention is repeatedly called to the fact that witnesses who testified that alum baking powder is injurious were not questioned as to the physiological effects of cream of tartar baking powder. Even in the case of testimony based upon experiments, alleged omissions are pointed out which are declared to make the results inconclusive. For instance, the following comment is made upon the experiments of Professor Munroe (pp. 35, 36 of Digest).

"He believes that hydrate of alumina will exert a harmful effect. He has, however, made no experiments himself, and hence expresses only an opinion. Later on Professor Munroe made bread with alum baking powder, extracted the bread with dilute hydrochloric acid, dialyzed the liquid and found compounds of aluminum in the dialyzates. As he did not make a blank test with the flour alone and did not determine the amounts of soluble salts of alumina present his experiments are not positive, for the soluble salts of alumina which he found may have come from the flour and not from the baking powder. It is a well-known fact that many samples of flour contain alumina. His inference that because a substance goes into solution in a 0.2 per cent solution of hydrochloric acid it will dissolve in the juices of the stomach, and that the alumina so dissolved will pass into the blood by osmosis, require experimental demonstrations on living animals or human beings and can not be proved by inference. Professor Munroe's statements and experiments are inconclusive."

Regarding the experiments of Dr. Mott, which consisted of feeding dogs with "biscuits made with immense quantities of alum baking powder," the memorial says: "Without going into a criticism of Dr. Mott's work, it is sufficient to state it is entirely contradicted and overthrown by the investigations of Professors Smith and Flint."

Professor Mallet's work is declared to be practically valueless because it avoids the real question. "He ate hydrate of alumina prepared in the laboratory, and not in the condition in which it exists in bread made with alum baking powder. * * * He practically admits that the amount of hydrate of alumina in a loaf of bread had no effect upon him when taken at a single dose. His experiments were performed only on himself. He did not make, as he would doubtless have done had he been making an independent scientific investigation, a study of the effects on himself of the residue from cream of tartar baking powder. Perhaps Mr. Hoagland, of the Royal Baking Powder Company, had no interest in the sensations that Professor Mallet might have experienced * * * had he taken 50 grains of Rochelle salts several times a day."

The memorial also calls attention to the fact that Professor Mallet has not experimented since 1888, and declares that the manufacture of alum baking powders has been greatly improved since that time. The exsiccated soda alum now used in making alum baking powder was not perfected in 1888. Professor Mallet did not make any experiments to show that unchanged alum is left in bread made with alum baking powders. He did not undertake to show by experiment that food prepared with alum baking powder is unwholesome. His experiments, from which he infers that aluminum hydroxide impairs digestion, are contradicted by the experimental work of Professors Smith and Flint. (Memorial, 41-52.)

The memorial declares that the chairman of the Senate Committee on Manufactures failed to reply to a request on behalf of the American Baking Powder Association for a hearing before the committee, yet after this request was sent "testimony was taken or letters solicited and printed from 28 persons hostile to the use of alum in baking powder." The memorial also says:

"The committee stated that for 12 months a most searching investigation has been made; and that its time were worse than wasted 'if it were not prepared to make specific recommendations, based upon the evidence which it has taken where such evidence is conclusive. Therefore, so far as the use of alum in the manufacture of a food product, such as baking powder, is concerned, the committee, in view of the overwhelming mass of evidence antagonistic to its use,

recommends that its use in food products and baking powders be prohibited by law.'

"In answer to this it may be said that the committee did not make a searching examination of the baking-powder matter. Not a single one of the many opinions in favor of alum baking powder given by distinguished men at home and abroad are found in this report. The effect of Professor Austen's short statement was ludicrous in the extreme.

"From that point to the end of the report more and more space is given to the opponents of alum baking powder. Chemists who were known to be favorable to the cream of tartar powder were telegraphed for to come on at once and testify before the committee. Old reports of no value were resurrected from library dust bins and used to fill up the report, in some cases with the dates omitted, so as not to attract public attention to their antiquity. In fact, the exact experimental investigation made by Professors Flint and Smith being unanswerable, pages of mere opinions not based upon facts, experience, or experimental investigation were introduced, so as to form what might be called an "overwhelming mass of evidence," and thus delude those not familiar with chemical and physiological science into mistaking opinions for proofs. (Memorial, 39-41.)

D. The occurrence of aluminum compounds in nature.—The memorial of the American Baking Powder Association says:

"Advocates of cream of tartar baking powders state that salts of alumina are not found in plants or articles of food, but such statements are false. Kayser states that many wines contain alumina in solution, which has been dissolved during their manufacture. L'Hoté also finds this to be the case. He also proved that both red grapes and their stalks contain soluble salts of alumina. The occurrence of alumina compounds in flour is so common that Wanklyn advises analysts to allow for it. Parmentier finds alumina salts in many spring waters. Yoshida proves that alumina compounds exist in peas, beans, rye, wheat, barley, millet, and buckwheat. Mushrooms, lichens, fungi, and mosses often contain considerable amounts of salts of alumina. In one moss (*Lycopodium complanatum*) acetate of alumina occurs in such quantities that a lye made from the plant can be used directly as a mordant in dyeing. The mountain raspberry has been found to contain an unusual amount of alumina salts. Drs. Harrington and Kinnicut find alumina in the ash of human and cow's milk."

It is further suggested that the opinion of some witnesses against alum baking powder, that the occurrence of any element or compound in vegetation is an indication of its suitability for food, is an opinion which would lead to unfortunate results if it were consistently applied. (Memorial, 32, 33, 47.)

E. Injurious effects of cream of tartar baking powder.—The memorial of the American Baking Powder Association quoted a statement made in Part 5 of Bulletin 18, "submitted to the Commissioner of Agriculture by Dr. H. W. Wiley, chief chemist of the division of chemistry," that a loaf of bread made with a tartrate powder contains an amount of salts more than equivalent to one Seidlitz powder. The memorial asserts that "eminent medical authorities claim that the continued use of small amounts of Rochelle salts is extremely harmful, and some, indeed, claim that the prevalence of Bright's disease is owing to the consumption of Rochelle salts in foods."

Dr. AUSTEN, testifying before the judiciary committee of the Georgia legislature, states that cream of tartar is made from argol, a substance deposited from grape juice during fermentation, termed chemically acid tartrate of potash. When mixed with bicarbonate of soda and a neutral substance it becomes baking powder. In making bread, a chemical action takes place which sets free carbonic-acid gas and leaves tartrate of potash and soda, ordinarily known as Rochelle salts. No argument based upon the healthful nature of cream of tartar as such applies as regards the effect of Rochelle salts, the sole residuum of the baking powder which remains in the bread. Rochelle salts were formerly used frequently as a medicine, but are now less approved because of their injurious effect on the kidneys and bowels. Thus in the bulletin on "Food and Adulterants," prepared by Dr. Wiley, of the United States Department of Agriculture, it is stated that the amount of cream of tartar baking powder used becomes in the bread the equivalent of nearly an equal weight of the active ingredient of Seidlitz powders, which powders are a strong purgative. The directions for the use of tartar baking powders often called for a quantity equivalent to two Seidlitz powders or more in a loaf of bread.

It is claimed by many authorities, as stated by Dr. Austen, that the presence of considerable quantities of Rochelle salts in food stuffs is harmful to digestion. The authorities quoted are Professor William Jage, Dr. James T. Nichols, Professor Von Fehling, and Dr. Withaus, in their respective text-books. In addition

to these authorities the witness refers to the statement of numerous physicians in New York City and Brooklyn, in the issues of the New York World of July 8 and 26, 1888. (Memorial, 27; "Some Interesting Information," 1-12.)

The New York World of July 26, 1888, contained an article on this subject, with the head lines "Dynamite outdone. The dangerous combination of cream of tartar and soda." The article consisted chiefly of interviews by a reporter with well-known physicians. The writer concluded that these physicians generally "join in denouncing the much used Rochelle salts powders, which are to a great extent responsible for the kidney troubles and dyspepsia which afflict the American people." The authorities quoted in this article are as follows: Dr. David A. Gorton; Dr. E. H. Bartley, chief chemist of the Brooklyn board of health; Dr. Frank A. West, professor of *materia medica* in the Long Island college hospital; Dr. W. H. Farrington, the house physician at the Astor House; Dr. William H. Dustman; Dr. W. J. Purcell, of the New York board of health; Dr. Moreau Morris, of the New York board of health; Dr. J. T. Nagle, chief of the New York bureau of vital statistics; Dr. Phillip E. Donlin, ex-deputy coroner of New York, and Dr. Robert L. Dickinson.

The general agreement among these physicians was that Rochelle salts, which are the residuum left by the action of cream of tartar baking powders, are likely, if used regularly in moderate quantities, unduly to irritate the coating of the stomach and of the whole alimentary tract, acting as a laxative at first, but ultimately tending to cause constipation, and that less serious effects would be produced upon the kidneys.

The most detailed statement is that of Dr. E. H. Bartley, who says: "Whenever cream of tartar is used in the kitchen it is changed chemically and becomes Rochelle salts. Rochelle salts are a cathartic, a medicine which so irritates the stomach and intestines that nature sets up an inflammation and a sickness to expel it from the system. This expulsion takes the form of cramps, diarrhea, and dysentery. Besides this the salt produces indigestion, dyspepsia, and constipation. Whenever there is a tendency to kidney disorders it aggravates them, and in many of these instances aids in starting the latent disease. * * * Each baking powder of this class prescribes an ounce of powder to a quart of flour. When this is baked it makes a 2-pound loaf, which contains one-half of an ounce of Rochelle salts. Well-to-do people eat on an average half a pound of bread, and working men 2 pounds per diem. The former, therefore, take into their system a quarter of an ounce, and the latter an ounce of Rochelle salts every day. The former certainly injure themselves, while the latter are ruining their systems. This probably is a powerful factor in causing the great mortality in sickness among working people." * * *

Dr. Frank A. West, professor of *materia medica* in the Long Island College Hospital, says that when Rochelle salts are introduced into the system in food they have to be eliminated either through the bowels or kidneys, and this would produce a highly irritating effect if kept up for any time.

Dr. Farrington, house physician of the Astor House, says that a baking powder which produces Rochelle salts would cause irritation of the intestinal canal, which, after a time, would cause obstinate constipation. The daily use of Rochelle salts for a considerable time would be likely to result in chronic dyspepsia, and would certainly injure the tissues as well as the mucous membrane.

Dr. David A. Gorton says that the daily consumption of Rochelle salts in ordinary food would in time produce a very injurious effect on the coatings of the stomach and bowels and on the kidneys. It would produce serious chronic dyspepsia and chronic gastritis.

Dr. Moreau Morris, of the New York board of health, says that Rochelle salts should never be used except by a physician's advice. Its continued use induces a very unhealthy condition of the stomach, and especially of the bowels, and finally produces constipation of an aggravated type.

Dr. W. J. Purcell, of the New York board of health, says that physicians seldom if ever use Rochelle salts to-day for laxative purposes, because if used persistently they produce an irritation of the bowels which becomes chronic, and which almost invariably results in serious and chronic constipation.

Dr. Robert L. Dickinson says that the effect upon children would undoubtedly be far more serious than upon adults, but even upon an adult the effect would be to produce diarrhea, colic, and a very much disordered condition of the stomach and bowels. "It would unquestionably produce a chronic gastric catarrh, if not gastritis. It would also affect the kidneys by increasing the amount of solid matter to be excreted by them. According to Bartholow, the best authority we have, the continued use of alkalis would produce the effect of a heart poison by lowering the blood pressure, the temperature, and the action of the heart. Such effects

are often seen in patients who have been actively treated for acute rheumatism by this very remedy." (Memorial, 27, 38, 39; "Some Interesting Information," 14-17.)

F. All baking powders injurious.—Dr. WILEY, chief chemist of the Agricultural Department, is opposed to all baking powders of every description. He believes that the introduction of mineral matters of that kind into the food is injurious, even if one can not put his finger on a specific instance. What makes men grow old is the hardening of their arteries, due to a deposit of mineral matter; if the arteries can be kept elastic, one will live to a green old age. The reason so many men who live by their brains fall down at their desks is because the coatings of their arteries become encrusted. When a small artery in the brain becomes encrusted that is the end of one's activity. Physicians advise the avoidance of mineral matters as far as possible. (Senate Committee, 38, 34.)

In a quotation from an address by the Hon. LEVI WELLS, State dairy and pure-food commissioner of Pennsylvania, before the national meeting of dairy and food commissioners at Chicago, October, 1890, it is declared that all baking powders are somewhat objectionable because of the salts which they leave in the food; whether the residuum be Rochelle salts, as in the cream of tartar baking powders, or whether it be something else, the result of an alum or an alum-phosphate powder. (Memorial, 29, 30.)

PROPOSED LEGISLATION.

A. General principles.—Dr. PENNIMAN says baking powders must be put in a separate class; they are not taken directly as a food or medicine, and he recalls no other instance in which a chemical process is introduced into everyone's kitchen to effect a certain chemical result. The only question is: Does it accomplish that result with due regard to the health of the consumer? (Senate Committee, 21.)

Dr. WILEY believes that alum is injurious, but he does not intend to be the judge of another man's diet. He is opposed to prohibitive legislation, and asks simply that all substances used in food be plainly marked on the label, to let each man judge for himself. In reply to a question from Mr. Higgins, Dr. Wiley says he would approve a provision that in the case of baking powder the residuum left in the bread should be stated on the label. (Senate committee, 34, 35.)

The memorial of the American Baking Powder Association declares that manufacturers of alum baking powders do not oppose honest, fair pure-food legislation, and are not in favor of any kind of fraud or deception. They do object to any legislation which is intended to benefit a rival industry at the expense of theirs, and which is promoted by manufactured testimony and by the opinions of scientific men which are not supported by experiments or facts. (Memorial, p. 42.)

B. Action of State legislatures.—The Richmond Chamber of Commerce declares it to be a striking proof of the weakness of the complaint against alum baking powders that the States of Georgia, Virginia, Mississippi, New York, and New Jersey have all refused to pass bills restricting their use. These States made careful investigations, while the one State that accepted the measure, Missouri, made no such investigation. A bill, which was an exact copy of the act passed by the Missouri legislature in 1899, was introduced into the legislature of Virginia in 1900. The committee of the Virginia senate to which the bill was referred and the Chamber of Commerce of Richmond each made an investigation and reached the conclusion that the proposed measure was unjust in its restrictions on the use of alum baking powders. Among the reasons set forth for this conclusion in the pamphlet of the chamber of commerce are these: That abundant testimony has been given before various bodies and in various publications that alum baking powder is not injurious to health; that the death rate in Richmond is lower since alum baking powder has been used than before; that the report of the Mason committee contained only ex parte evidence on this subject, and that alum baking powder is much cheaper than cream of tartar baking powder.

The chamber of commerce lays especial stress on the fact that the Missouri act had been passed without due consideration, and that after an extended trial in a test case a Missouri judge expressed the conviction that alum baking powder was harmless. (Pamphlet issued by Richmond Chamber of Commerce.)

C. Senate bill 3618.—The memorial of the American Baking Powder Association calls attention to the fact that Senate bill 3618, introduced March 15, 1900, makes it the duty of the Secretary of Agriculture to fix standards of food and to determine the wholesomeness of substances added to foods; his decision to fix the standards which the United States court must recognize. These provisions would put the alum baking powder industry at the mercy of the Secretary of Agriculture, who, though a perfectly reliable official, the memorial says, may be affected by

misleading statements and by an unfounded prejudice against alum baking powders. It is unjust that a great industry should be placed at the mercy of any one individual without even a chance of recourse to the courts. (Memorial, pp. 1, 2.)

Mr. HIGGINS states that the American Baking Powder Association heartily approves of correct pure-food legislation, and is not hostile to the principles of Senate bill 3618, but considers that section 7 is unwise in its provisions and would unjustly injure the alum baking powder industry. The association desires the standards and wholesomeness of baking powder to be decided in the courts, and not by the Secretary of Agriculture. If section 7 be retained, the association asks that baking powders be excluded from its provisions and made the subject of a separate provision. (Senate committee, 18.)

Mr. S. H. STEELE, vice-president of the General Chemical Company, says he is in full sympathy with pure-food legislation, but questions whether Congress can fairly discharge its duty by delegating to one man or set of men absolute power to establish what is or is not wholesome, as in section 7 of Senate bill 3618. Mr. Steele considers that this would be an unconstitutional delegation of the law-making power, and suggests that the clause providing for forfeiture of deleterious substances is a deprivation of property without due process of law. Aside from constitutional considerations, Mr. Steele says that it is contrary to the spirit of fairness and justice that one man should be empowered to determine what is a crime. He suggests an amendment making the conclusions of the Secretary of Agriculture admissible as evidence, with whatever weight the jury and court may see fit to assign them, but not conclusive. (Senate committee, 3, 4.)

Mr. UDELL objects to section 7 on the ground that it is not made compulsory upon the Secretary of Agriculture to accept the opinion of the 12 experts provided for, but that it still rests absolutely with him to decide. He says this bill is a direct assault upon the business of his company. (Senate committee, 11, 13.)

Mr. THOMPSON says the American Baking Powder Association does not object to pure-food legislation for the benefit of the public health, but does object to being subjected to a few men who may have a theory, and, acting upon that theory, may destroy the alum baking powder business. The association desires a chance in the courts to have full testimony on both sides. (Senate committee, 28.)

Mr. EDWARDS also objects to the provision of Senate bill 3618 giving the Secretary of Agriculture power to declare whether alum baking powder is wholesome or not. Declaring it unwholesome, he says, would mean the irretrievable ruin of all the alum baking powder companies. Mr. Edwards considers the mode of selecting the commission of experts provided by the bill to be too vague. He asks that section 7 be stricken from the bill, or that baking powders be excepted. (Senate committee, 8-10.)

Mr. CHARLES E. JAQUES, of Chicago, a manufacturer of alum baking powder, says he is in favor of pure-food legislation, but sees the product he manufactures endangered by Senate bill 3618, particularly by section 7, because there is a prejudice throughout the country, created by advertising, against baking powders containing alum. On account of that prejudice he is very much opposed to leaving his future business career in the hands of a commission. The manufacturers have the right to go into court to state their case, and carry it up to the final court of appeals if necessary. (Senate committee, 27.)

Mr. COYNE asks that the inalienable right to earn an honest living be preserved, and that the courts and right of trial by jury remain open to the manufacturers of alum baking powder. (Senate committee, 26.)

Mr. DAVIS does not wish any commission or set of men to destroy his business because it is their opinion he is wrong. He objects to the Secretary of Agriculture having charge of the matter, because there is a prejudice built up in the public mind, which it is impossible to eradicate, that alum is unhealthful. He thinks a chemist is incapable of deciding; it is necessary to have physiologists who understand the channels of digestion. He believes it is incumbent on the United States Government to make a physiological examination of the materials available for baking powder. Mr. Davis says there are men in the South who manufacture baking powder containing 17 per cent of carbonic-acid gas, and there is a firm in Rhode Island which has come out recently with a baking powder containing 10 per cent of carbonic-acid gas, and presents logical arguments why 10 per cent is as desirable as 17 per cent. If the gentlemen in the Department of Agriculture should decide 12, 13, or 14 per cent to be the proper thing, the men in Providence would have lost \$300,000 or \$400,000, and the men in the South would have lost their business, amounting to \$1,000,000 or more. (Senate committee, 24, 25.)

Mr. ACH believes that lodging so much power in the hands of one individual or coterie, as contemplated by section 7, would subject them to such temptation as

never before assailed mortal man in this country. He bases this statement on what the profits of the cream of tartar baking powder company would be if the measure should be adopted. He declines to sanction any measure that would subject any man to such temptation. (Senate committee, 24.)

Dr. PENNIMAN, chemist of the Maryland State board of health, prefers to leave the wholesomeness of alum baking powder to the courts, rather than to the Secretary of Agriculture, because while a jury of 12 intelligent men have sometimes let a guilty man escape, they have seldom convicted an innocent one; but in a scientific commission the strongest mind is very apt to lead, and one man will make up the finding of the whole. (Senate committee, 22.)

Mr. JOHN DAVIS, president of the Detroit Chemical Works, asks that the decision as to the standards and comparative usefulness of baking powders be made in the courts, where a proper defense can be made.

Mr. ARTHUR WYMAN, general agent of the Pennsylvania Salt Manufacturing Company, states that one of the products made by this company is alum. He believes it a legitimate industry, and is opposed to any adverse national legislation which will prevent its being heard on its merits in the courts. (Senate committee, 5.)

Mr. E. L. DUDLEY, of Dudley & Co., Fairport, N. Y., is opposed to section 7 of bill 8618 as antagonistic to his business, and says it would ruin his company. (Senate committee, 30.)

Dr. WILEY, chief chemist of the Department of Agriculture, says the whole question of advertising and trade rivalry is entirely foreign to the bill under consideration. The great question is whether things which are added to food are injurious and what is the best method of finding out. The provisions objected to had all been drawn long before Senator Mason's committee commenced its investigation, and were in the bills reported during many sessions. The object has been to establish some unbiased commission, which could get at the matter without being paid by rival concerns, not being in the employ of any commercial interest, but selected jointly by the President of the United States and the Secretary of Agriculture, and presumably of a high order and unbiased in its relations to trade interests.

Dr. Wiley says he would deplore any action which would injure any legitimate business, and would be the first to condemn the findings of a commission which would be unfair to anyone's trade interests. It seems to him that it is unfair to assume that section 7 is antagonistic to alum baking powder; it had no more reference to alum baking powder than to any other injurious substance. The bill provides that every interest shall be heard by the commission. In studying the effect of alum in food the commission would be required to inform the manufacturers, and ask them to appear and present their side of the case. (Senate committee, 33, 34.)

D. Amendment to Senate bill 8618.—Dr. WILEY expresses his entire willingness to accept an amendment making the findings of the commission simply a guide to the court instead of obligatory upon the courts. (Senate committee, 34.)

Mr. STEELE submits an amendment, approved by Dr. Wiley, making the standards and determinations approved by the Secretary of Agriculture merely evidence, which may be heard with all the weight that would naturally attach to the conclusion of a commission of experts, but leaving the parties in interest at liberty to show that the conclusion may be erroneous. (Senate committee, 35, 36.)

DIGEST OF THE LAWS OF THE UNITED STATES AND THE SEVERAL STATES AND TERRITORIES RELATING TO ADULTERATED AND UNWHOLESMOE FOOD.

INTRODUCTION.

AUTHORITIES FOR THE ENFORCEMENT OF PURE-FOOD LAWS.

While laws of one kind or another prohibiting the adulteration of food are found in practically every State in the Union, effective provisions for the enforcement of these laws have been enacted in only about half of the Commonwealths. In Connecticut and Kentucky the State agricultural experiment station is charged with the enforcement of the laws regarding adulteration of food and unwholesome food, while Connecticut has also a dairy commissioner to enforce the regulations as to dairy products. The State board of agriculture in North Carolina is directed to enforce the pure-food laws, while in Missouri and New York the board of agriculture enforces the laws relating to dairy products only. In New York, New Jersey, Indiana, Louisiana, Massachusetts, New Hampshire, South Carolina, and Tennessee the State board of health is the authority for executing these laws, and is usually empowered to appoint inspectors and in some cases chemists and other experts. Special officers, usually known by the title of dairy and food commissioners, have been established for the enforcement of the pure-food laws in Illinois, Michigan, Minnesota, Nebraska, Ohio, Oregon, Pennsylvania, Utah, Washington, and Wisconsin. California, Colorado, Iowa, and North Dakota have dairy commissioners to administer the laws regarding dairy products, but have no special officers to enforce the other pure-food laws.

These various authorities and their inspectors or agents are, in every case, given quite definite authority to enter premises where they believe articles of food are manufactured or sold, to open any package and inspect the contents, and to take samples for analysis. Penalties are usually prescribed for hindering these officers in the discharge of their duties. In several of the States where such special officers exist, and in some others where the law makes no provision for State inspection, it is provided that manufacturers and sellers of articles of food must deliver a sample to any person interested who tenders the market price.

GENERAL LAWS REGARDING THE ADULTERATION OF FOOD.

Practically every State and Territory has a provision of some sort prohibiting the adulteration of food and the sale of adulterated food. In a considerable number of States, especially in the South and West, these provisions are very brief and general in their form. They do not carefully define adulterations or provide for exceptions. More recent laws enacted in over half of the States are much more elaborate and effective. In many cases the language used in these later laws is practically identical in the different States. After defining food in a broad manner, especially so as to include articles of drink, they usually declare that food

shall be deemed adulterated in the following cases: "First, if any substance or substances have been mixed with it so as to reduce or lower or injuriously affect its quality or strength; second, if an inferior or cheaper substance or substances have been substituted wholly or in part for it; third, if any valuable constituent has been wholly or in part abstracted from it; fourth, if it is an imitation of or is sold under the name of another article; fifth, if it consists wholly or in part of a diseased, decomposed, putrid, or rotten animal or vegetable substance, whether manufactured or not; sixth, if it is colored, coated, polished, or powdered whereby damage is concealed, or if it is made to appear better or of greater value than it really is; seventh, if it contains any added poisonous ingredient or any ingredient which may render it injurious to the health of a person consuming." There are some modifications in detail in the laws of the various States.

These general laws also provide for certain exceptions from their definitions. Thus it is commonly declared that mixtures or compounds known as ordinary articles of food shall not be deemed adulterated if they are so labeled as distinctly to show their character and if they contain no injurious substance. The further provision is added by a few States that such permissible compounds must contain every necessary ingredient and no unnecessary ingredient, while a few States require that the names of their ingredients shall be placed on the label.

Oregon and South Dakota have detailed definitions of adulterated foods, but permit their sale if properly labeled to show their true character.

These more elaborate laws usually contain also definite provisions regarding their enforcement, which are seldom found in the briefer laws. Sometimes there are very detailed requirements regarding the taking of samples, such as a requirement that the sample shall be taken in the presence of the owner or his representative and often another witness, or the requirement that a part of the sample shall be sealed up separately and left with the person in charge as a protection against error and fraud in the analysis of the article.

In Colorado, Iowa, New Hampshire, and Maryland the laws regarding food adulterations are less elaborate. They declare usually that no injurious adulteration shall be permitted, but that mixtures or adulterations which are not harmful may be sold if the purchaser is informed of their character and if they are properly labeled.

SALE OF UNWHOLESOME FOOD.

Nearly all of the States prohibit the sale of impure, corrupted, decayed, or otherwise unwholesome articles of food or drink. A few States make this prohibition only with the added clause, "unless the buyer is informed as to the true character of articles." The laws on this subject are for the most part brief and do not differ greatly among themselves. Some add more specific prohibitions, such as that the flesh of an animal which was diseased or which died otherwise than by slaughter shall not be sold; but the general terms of the other laws would doubtless cover cases of this sort.

Most of the States having detailed laws concerning food adulteration such as have already been described include, under the definitions of adulterated food, articles which consist of or contain tainted or unwholesome animal or vegetable matter. Some of these States have also separate provisions regarding unwholesome food, but in others the definition in the general law is the only one on this subject.

The laws of a dozen or more States, including such important States as Illinois, Indiana, Massachusetts, Missouri, and New York, prohibit the killing, for the purpose of sale, of a calf under the age of 4 weeks (in one or two States, 6 weeks) or the sale of the flesh of a calf killed under that age. Ohio has a more detailed law on this subject.

VINEGAR.

Approximately half of the States have special laws regarding the adulteration or fixing the standard of vinegar. Kansas, Maine, Maryland, and New Jersey content themselves with declaring that no vinegar shall be sold as cider vinegar which is not produced solely from pure apple juice, and that no injurious ingredients shall be used in vinegar of any sort. Missouri prohibits imitations of fruit vinegar and the use of artificial coloring in vinegar. The other States regulating vinegar are Connecticut, District of Columbia, Illinois, Indiana, Kansas, Michigan, Minnesota, Nebraska, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, and Wisconsin. The laws of these States have the general provisions above named, but add other more elaborate requirements. They require that vinegar shall have an acidity usually equivalent to 4 per cent of absolute acetic acid; in Minnesota, New York, Oregon, South Dakota, Rhode Island, and Virginia the standard is 44 per cent. Most of these States declare further that cider vinegar must contain at least 2 per cent of cider vinegar solids. It is also a common requirement that all vinegar shall be made exclusively from the fruit or grain from which it purports to be made and shall be correctly branded. In many States the law requires the name and residence of the manufacturer of vinegar, especially if it is labeled "cider vinegar," to be branded on the package. In a few States there is a clause fixing the percentage of solids and of mineral matter or mineral ash which must be contained in fruit vinegar of any kind. A somewhat more common provision prohibits the use of artificial coloring matter in vinegar. Ohio, Michigan, Pennsylvania, and Illinois require the branding of vinegar in such a way as to indicate whether it is fermented or distilled, while Minnesota, South Dakota, Utah, and one or two other States require the strength or acidity to be marked.

ADULTERATION OF LIQUORS.

Liquors are uniformly included under the definition of food in connection with the general laws prohibiting food adulteration. In addition a considerable number of States have special laws regarding the adulteration of liquors intended for use as beverages. The most usual form of these laws is a prohibition upon the adulteration of spirituous or malt liquors with certain enumerated drugs or with other injurious substances. The drugs which are most commonly named in the prohibition are coccus indicus, wormwood, aloes, salicylic acid, etc.

Georgia, Indiana, New York, and Ohio have special laws prohibiting the adulteration of domestic wine (that is, wine made within the State) with other liquors or foreign substances. The Ohio and New York laws are exceedingly detailed, providing for the labeling of wine "pure wine," "wine" or "half wine," and "compound wine" according to its standard.

Missouri has established an inspector of beer whose duty it is to inspect all breweries and to stamp every package containing beer with a certificate as to its purity. Beer must be manufactured only from pure enumerated grains, malt, hops, and yeast.

SUGAR, SIRUP, AND HONEY.

The laws of Connecticut, District of Columbia, Iowa, Louisiana, Maine, Maryland, Massachusetts, and Michigan contain special provision regarding the adulteration of sugar and molasses with glucose, starch sugar, and similar products. In some instances the law merely prohibits fraudulent adulteration, while in other States it is provided that the proportion of glucose or the proportions of all the ingredients must be labeled upon packages containing such adulterants. In California, Kentucky, Minnesota, South Dakota, and Vermont there are found provisions requiring that compounds in imitation of honey not produced exclusively

by the honey bee must be labeled to show their true character. Minnesota and South Dakota further prohibit the sale as genuine of honey produced by bees fed with sugar, glucose, or similar substances.

In Massachusetts, Michigan, Ohio, Vermont, and New York the adulteration of maple sugar or syrup with cane sugar or glucose or other substances is prohibited, as well as the sale of such adulterated articles. New York and Ohio further prohibit the adulteration of cane sugar or syrup with maple sugar or syrup.

ADULTERATED CANDY.

Within comparatively recent years a large majority of the States have passed laws prohibiting injurious adulterations of candy. These laws are usually in practically the same language. They declare it unlawful to manufacture or sell candy containing terra alba, barytes, talc, or other mineral substances, or injurious flavors or coloring matter, or other harmful substances.

CANNED GOODS.

In Illinois, Iowa, Kentucky, Massachusetts, Michigan, Ohio, and Wisconsin the law requires that canned goods of any sort must be distinctly labeled with the name and place of business of the packer (or, in some States, of either the packer or the dealer), together with some term indicating the quality of the contents. Most of these States further declare that so-called "soaked" or "bleached" goods—that is, goods canned from products previously dried—must be labeled as such in prescribed type.

ADULTERATION OF LARD.

Eleven States have special provisions regarding the adulteration of lard (District of Columbia, Illinois, Iowa, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Pennsylvania, South Dakota, and Vermont). The usual provision is that no combination of fats or oils not produced exclusively from pure fat of healthy swine shall be marked "pure," "refined," or "family," but that every such compound must be distinctly marked in prescribed type "compound lard" or, in some States, "substitute." Lard mixed with other substances must in some of these States be marked "adulterated." In two or three States the name of the manufacturer of such compounds must also be placed on the label, and in others retail packages containing it must be accompanied with a proper label.

ADULTERATION OF OTHER ARTICLES OF FOOD.

In certain States provisions regarding the adulteration of other specific articles have been enacted. Thus in California it is unlawful to sell adulterations or imitations of olive oil. The laws of the District of Columbia define in detail the standards of coffee, tea, cider, glucose, flour, bread, and olive oil. In Illinois, Michigan, South Dakota, and Minnesota there are special regulations requiring the labeling of imitations or adulterations of jellies or jams. Wisconsin, South Dakota, and Minnesota regulate the manufacture and sale of baking powder, especially that containing alum. In Nebraska and Virginia the adulteration of cider is prohibited, while in Missouri, Texas, Virginia, and Vermont mixtures of grain or adulterations of flour or meal must be labeled to show their true character. Illinois has regulations concerning the adulteration of flavoring extracts, chocolate, and cocoanut, while Minnesota and South Dakota similarly regulate the adulteration of spices and condiments.

IMITATION BUTTER, OLEOMARGARINE, ETC.

Almost every State and Territory in the Union has a special provision in its laws regarding imitations of butter. Many of these provisions are highly elaborate. In more than half of the States it is declared that imitations of butter must be wholly free from coloration. Most of the great dairy States have this provision. A common form of the law is to prohibit the manufacture or sale of any compound of fats, in imitation of butter, not produced wholly from pure milk or cream, with the proviso that oleomargarine may be sold in separate form, in such manner as to advise the consumer of its true character, free from coloration or from any ingredient which makes it look like butter. In other States it is declared that no person shall mix any combination of fats not produced from pure milk or cream with annatto or other coloring substances or with genuine butter, so as to make the product resemble butter.

A large proportion of the States which thus provide that imitations of butter shall be free from coloring add further that they shall be labeled distinctly to show their true character. In some cases the label must be "substitute for butter;" in other cases "oleomargarine," while a few States allow various alternative phrases to be used. Such labels must be placed conspicuously upon the original package, often in two or more places, and retail sales must be accompanied by a wrapper or label of a similar character. The size of type is generally prescribed where labels are required. A half dozen of the States which forbid the coloring of imitation butter content themselves with a further prohibition upon the sale of imitation butter as genuine, without distinctly prescribing the method of marking it.

Vermont, South Dakota, and West Virginia require oleomargarine to be colored pink. In 13 States, the most important of which are California, Indiana, and Michigan, the law does not prohibit the coloration of imitation butter but merely requires it to be labeled properly. The provisions regarding these labels correspond closely with those already referred to. Of these 13 States, California, North Carolina, and Michigan further require the names of the ingredients of imitation butter to be placed upon the label. And there is a similar requirement in Ohio, where the coloration of oleomargarine is also prohibited.

Two or three States merely prohibit the sale of imitations of butter without more specific provisions. It is probable that these laws would be construed to permit the sale of oleomargarine in distinct form.

More than two-thirds of the States which have laws directed against the manufacture and sale of imitation butter add a provision that keepers of hotels, boarding houses, and other places of public entertainment, who use or serve such imitation, must give notice of the fact to their guests, either verbally or by printing upon the bill of fare or by posting a conspicuous notice in prescribed type, or sometimes by all of these methods. In California, New York, Pennsylvania, Utah, and Wisconsin it is unlawful to use imitation butter or cheese in any institution receiving State support. Several States, notably Connecticut, Massachusetts, Ohio, Michigan, and Wisconsin, further require that all places where oleomargarine or similar substances are sold shall maintain conspicuous notices to that effect. Pennsylvania and Nebraska require manufacturers and dealers in imitation butter to obtain a State license, paying fees of considerable amount. In Connecticut, New York, Minnesota, and one or two other States the law declares that the words "butter," "dairy," "creamery," or any name or representation of a breed of dairy cattle, shall not be used in connection with imitations of butter.

California, Michigan, Minnesota, Pennsylvania, and Wisconsin have recently enacted laws regarding what is known as "process butter" or boiled butter—made by melting down original stock butter, usually of an inferior character,

and mixing it with milk and reworking it into the form of butter. These States require that butter produced in this way shall be conspicuously labeled "process butter" or "renovated butter."

IMITATION AND FILLED CHEESE.

Laws regarding the adulteration or imitation of cheese are less generally found than those regarding imitation butter. In eight of the States the laws already described regarding imitation butter embrace also imitation cheese; it is thus unlawful to color any imitation to resemble genuine cheese, and labels of imitations are required. In six other States there are separate provisions prohibiting the sale of imitation cheese as genuine, while two States require that it shall be conspicuously labeled as such. "Imitation" in these States seems usually to include what is elsewhere defined as "filled" cheese. Several of the leading dairy States, notably Michigan, New York, Pennsylvania, Utah, Washington, and Wisconsin, prohibit the sale of "filled cheese," that is, cheese into which melted butter or animal fats or oils have been introduced. In Ohio and New Hampshire filled cheese may be sold if labeled conspicuously as such.

BRANDING OF CHEESE.

California, Colorado, Michigan, New York, North Dakota, Ohio, Pennsylvania, Washington, and Wisconsin, all important dairy States, provide for the branding of cheese. Full cream cheese is defined in some of these States as that made from milk from which no cream has been removed, or milk conforming to the legal standard. In other States it is defined as cheese containing a certain percentage of fats to total solids or to total weight; these percentages differ materially. Nearly all the States named authorize and some of them require the branding of full cream cheese as such, usually with the name of the State added. Stencils for this purpose are in many cases furnished by State authorities. In four of these States it is required that cheese made from skimmed milk shall be conspicuously labeled "skimmed cheese," and there is a similar provision as to skimmed cheese in two or three States which have no other restrictions on this subject. California and Pennsylvania establish several different grades of cheese according to the percentage of fat, and require them to be labeled as such.

PURITY OF MILK.

Nearly all of the States have laws prohibiting the adulteration of milk, or the sale of adulterated milk, and most of them add a prohibition against the sale of impure or unwholesome milk. In many States detailed definitions are given as to what constitutes adulterated or impure or unwholesome milk. Thus milk is considered adulterated if water or any other foreign substance is added to it. It is considered unwholesome if taken from cows having diseases, sores, etc., or within 15 days before or 4 or 5 days after parturition, or from cows which are fed upon any substance in a state of putrefaction or otherwise tending to produce unwholesome milk. A number of the States specially declare that milk from cows fed on brewery or distillery waste shall be considered unwholesome. A smaller number of States have laws prohibiting the keeping of cows which are used to produce milk for sale in stables which are crowded or otherwise unhealthy, and further prohibiting the sale of milk from cows kept in such conditions, while two or three also forbid the sale of milk exposed to exhalations, etc., from persons having contagious diseases.

In several States the sale of skimmed milk or milk from which the stripplings have been withheld is prohibited, though it is possible that the courts would interpret this provision to mean that such milk must not be sold as pure. The

laws of several other States contain such a modifying provision, declaring that skimmed milk may be sold only with notice to the purchaser of its character. In fully half of the States, including most of the leading dairy States and those containing large cities, skimmed milk may be sold only from cans or vessels conspicuously marked, in prescribed type; with the words "skimmed milk." The New York law especially declares that skimmed milk shall not be sold at all in Greater New York, but may be sold as such in other parts of the State.

About half of the States, including the most populous and important ones, define the standard of milk in terms of the proportion of butter fat and of total solids to the entire weight of the milk. The most common requirement is that milk shall contain not less than 3 per cent of butter fat, but the District of Columbia, Maryland, and Minnesota require 3.5 per cent, while Massachusetts requires 3.7 per cent. The standard for total solids including fat is 11.5 per cent in 1 State, 12 per cent in 4 States, 12.5 per cent in 6 States, and 13 per cent in 3 States (Massachusetts, Minnesota, and New Hampshire).

Several of the leading dairy States have provisions also regarding creameries and cheese factories, regulating the method of testing, weighing, and accounting for milk, and prohibiting the conversion of milk or its products, when received in trust for manufacture for the benefit of the owner, to the use of any other person. In a few cases the law declares that creameries and utensils used in connection with them must be kept in a clean and sanitary condition.

The enforcement of the law regarding the purity of milk is often placed in the hands of local inspectors or boards of health, even in States having central dairy officers. In California State inspectors of milk are provided for, while in Iowa, Minnesota, and Washington persons selling milk in cities are required to obtain licenses from the State authorities, which are also charged with the enforcement of the laws as to milk. The dairy laws of Connecticut, District of Columbia, Maine, Maryland, Massachusetts, Michigan, New Hampshire, and Rhode Island authorize or require local governments to appoint inspectors of milk and prescribe the powers of these inspectors. In several of these States it is further provided that keepers of dairies must obtain licenses or permits. It should be noted also that the laws regarding municipal corporations frequently contain provisions authorizing them to regulate the adulteration and sale of milk, and to inspect it.

CHEMICAL PRESERVATIVES IN DAIRY PRODUCTS.

Several States (Kansas, Maryland, Michigan, Minnesota, New York, Pennsylvania, Virginia, and Wisconsin) expressly prohibit the use of certain enumerated or other injurious chemicals in milk, butter, or other dairy products. These chemicals are mostly such as are used for preserving these products.

I.—TABULAR SUMMARY OF LAWS OF THE STATES AND TERRITORIES

States.	Authorities for enforcing law.	General provisions as to food adulteration.
Alabama		Brief general prohibition
Arizona		Brief general prohibition
Arkansas		Detailed definitions; must be labeled. Injurious adulterations prohibited
California		
Colorado		
Connecticut	Agricultural experiment station	Detailed definitions
Delaware	Health officer of District	Detailed definitions
District of Columbia		
Florida		Brief general prohibition
Georgia		Unlawful unless labeled
Idaho		Brief general prohibition
Illinois	Food commissioner; inspectors	Detailed definitions
Indiana	State board of health	Detailed definitions
Iowa		Unlawful unless labeled
Kansas		Detailed definitions
Kentucky	Agricultural experiment station; in-spectors	Detailed definitions
Louisiana	State board of health	Detailed definitions; must be marked with quality
Maine		Brief general prohibition
Maryland		Unlawful unless labeled
Massachusetts	State board of health; inspectors	Detailed definitions
Michigan	Dairy and food commissioner; in-spectors	Detailed definitions
Minnesota	Dairy and food commissioner; in-spectors	Brief general prohibition
Mississippi		Detailed definitions
Missouri		Brief general prohibition; poisonous adulterations
Montana		Brief general prohibition
Nebraska	Dairy and food commissioner	Detailed definitions
Nevada		Brief general prohibition
New Hampshire	State board of health	Detailed definitions
New Jersey	State board of health and dairy com-missioner	Detailed definitions
New Mexico		Unlawful unless labeled
New York	State board of health; inspectors	Detailed definitions
North Carolina	State board of agriculture	Detailed definitions
North Dakota		Brief general prohibition
Ohio	Dairy and food commissioner	Detailed definitions
Oklahoma		Brief general prohibition
Oregon	Dairy and food commissioner	Detailed definitions; labeled
Pennsylvania	Dairy and food commissioner; in-spectors	Detailed definitions
Rhode Island		Brief general prohibition
South Carolina	State board of health; inspectors	Detailed definitions
South Dakota		Detailed definitions; labeled
Tennessee	State board of health; experts	Detailed definitions
Texas		
Utah	Dairy and food commissioner	Brief general prohibition
Vermont		Brief general prohibition
Virginia		Brief general prohibition
Washington	Dairy and food commissioner	Detailed definitions
West Virginia		Brief general prohibition
Wisconsin	Dairy and food commissioner	Detailed definitions
Wyoming		Brief general prohibition

RELATING TO THE ADULTERATION OF FOODS GENERALLY.

Unwholesome or spoiled food.	Adulteration of liquors.
Brief general prohibition.....	Drugs and injurious substances prohibited.
Brief general prohibition.....	Injurious substances prohibited.
Brief general prohibition; veal.....	Injurious adulterations prohibited.
Covered by definition of adulteration.....	Injurious adulterations prohibited.
Brief general prohibition.....	Domestic wine—adulteration prohibited.
Covered by adulteration.....	Injurious substances prohibited; domestic wine
Covered by adulteration.....	Injurious substances prohibited.
Covered by adulteration; veal.....	Injurious adulterations prohibited.
Brief general prohibition; veal.....	Injurious and abnormal ingredients prohibited.
Buyer must be informed.....	Injurious and abnormal ingredients prohibited.
Buyer must be informed.....	Poisonous ingredients prohibited; detailed regulation of beer.
Covered by adulteration.....	Injurious adulterations prohibited.
Brief general prohibition.....	Injurious adulterations prohibited.
Covered by adulteration; veal.....	Injurious and abnormal ingredients prohibited; domestic wines.
Covered by adulteration.....	Regulation of domestic wine.
Covered by adulteration; veal.....	
Buyer must be informed; veal.....	Adulteration prohibited; State assayer.
Brief general prohibition.....	Injurious or abnormal ingredients prohibited.
Unlawful unless buyer informed.....	
Covered by adulteration.....	
Brief general prohibition.....	
Brief general prohibition; veal.....	
Buyer must be informed.....	
Covered by adulteration.....	
Unlawful unless buyer informed.....	
Unlawful unless buyer informed.....	
Brief general prohibition.....	

II.—TABULAR SUMMARY OF LAWS OF THE STATES AND TERRITORIES

States.	Vinegar.	Sugar and syrup.	Maple sugar and syrup: honey.
Alabama			
Arizona			
Arkansas			
California			Honey—adulteration prohibited; compounds labeled.
Colorado		Glucose—buyer informed; percentage marked.	
Connecticut	4 per cent acidity; branding kind; no harmful ingredients.	Adulteration prohibited	
Delaware		Adulteration prohibited	
District of Columbia	4 per cent acidity; imitation cider vinegar.		
Florida			
Georgia			
Idaho	4 per cent acidity; imitation cider vinegar; injurious ingredients.		
Illinois	4 per cent acidity; branding quality and kind; harmful ingredients.		
Indiana	4 per cent acidity; branding kind; harmful ingredients.		
Iowa		Glucose—buyer informed; percentage marked.	
Kansas	Imitation cider vinegar; harmful ingredients.		
Kentucky	Branded with process and material of manufacture.		Honey—compounds labeled.
Louisiana		Adulteration prohibited	
Maine	Imitation cider vinegar; harmful ingredients.	Adulteration prohibited	
Maryland	Injurious ingredients prohibited.	Glucose forbidden in sugar, syrup, or honey. Molasses marked with ingredients.	
Massachusetts			Maple syrup marked with ingredients.
Michigan	4 per cent acidity; branding quality and kind; harmful ingredients.	Molasses and syrup branded; proportion of glucose.	Maple syrup; adulterants marked with percentages.
Minnesota	4 per cent acidity; branding kind and strength, harmful ingredients.		Honey; compounds labeled.
Mississippi			
Missouri	Imitation cider or fruit vinegar prohibited; no coloring.		
Montana			
Nebraska	4 per cent acidity; branding kind; licenses; harmful ingredients.		
Nevada			
New Hampshire			
New Jersey	Imitation cider vinegar; injurious ingredients.		
New Mexico			
New York	4 per cent acidity; branding kind; harmful ingredients.		Maple syrup; adulteration forbidden.
North Carolina			
North Dakota			
Ohio	4 per cent acidity; branding quality and kind; harmful ingredients.		Maple syrup; adulteration prohibited.
Oklahoma			

RELATING TO THE ADULTERATION OF SPECIAL ARTICLES OF FOOD.

Candy— Injurious adultera- tions, flavors, and colors.	Canned goods.	Lard adulterations and compounds.	Other articles.
Uniform law			
Uniform law			Adulteration of olive oil.
Uniform law			
Uniform law		Adulteration prohibited; labeling compounds.	Coffee, tea, cider, glu- cose, flour, bread, olive oil, standards defined.
Uniform law			
Uniform law			
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.	Labeled "compound" ..	Extracts, chocolate, co- coanut, jellies.
Uniform law			
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.	Labeled "compound," with manufacturer's name.	
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.	Labeled to show true character.	
Uniform law			Cleaning of rice with oil, etc.
Uniform law		Labeled "compound" ..	
Uniform law			
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.	Labeled "compound" ..	Impure ice.
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.	Labeled "compound," etc.	Jelly, coffee, buckwheat flour; labeled.
Uniform law		Labeled "substitute" or "adulterated," with ingredients.	Jelly, spices, baking powder; labeled.
Uniform law			
Uniform law			Adulteration of flour.
Uniform law			
Uniform law			Adulteration of cider.
Uniform law			
Uniform law			Impure ice; biscuits.
Uniform law			
Uniform law			Impure ice; fruit juices; coloring matter.
Uniform law			
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.		Adulteration of choco- late.

II.—TABULAR SUMMARY OF LAWS OF THE STATES AND TERRITORIES RELATING

States.	Vinegar.	Sugar and sirup.	Maple sugar and sirup; honey.
Oregon	4½ per cent acidity; imitation cider vinegar; injurious ingredients.	.....	.....
Pennsylvania.....	4 per cent acidity; branding quality and kind.	.....	.....
Rhode Island.....	4½ per cent acidity; imitation cider vinegar.	.....	.....
South Carolina.....	.....	.....	.....
South Dakota.....	Detailed regulations.....	.....	Adulterated honey labeled.
Tennessee .....	.....	.....	.....
Texas.....	.....	.....	.....
Utah.....	4½ per cent acidity; branding kind and strength; injurious ingredients.	.....	.....
Virginia	Imitation cider vinegar; 4½ per cent acidity; injurious ingredients.	.....	.....
Vermont.....	.....	.....	Honey and maple sirup; adulteration prohibited.
West Virginia .....	.....	.....	.....
Washington .....	.....	.....	.....
Wisconsin	Imitation cider vinegar; 4 per cent acidity; no injurious ingredients.	.....	.....
Wyoming.....	.....	.....	.....

TO THE ADULTERATION OF SPECIAL ARTICLES OF FOOD—Continued.

Candy— Injurious adultera- tions, flavors, and colors.	Canned goods.	Lard adulterations and compounds.	Other articles.
			Jellies and jams.
Uniform law		Labeled "compound" ..	
Uniform law			
Uniform law		Labeled "substitute" or "adulterated."	Jellies, spices, and bak- ing powder; labeled.
Uniform law			Adulteration of flour, etc.
Uniform law			
Uniform law			Flour and cider.
Uniform law		Labeled "compound" ..	Flour and meal.
Uniform law	Manufacturer's or dealer's name; soaked goods la- beled.		Alum baking powder; so labeled.

III.—TABULAR SUMMARY OF LAWS OF THE STATES AND

States.	Authorities for enforcement.	Imitation butter—oleomargarine, etc.	Imitation cheese.
Alabama		No coloration or sale as genuine. Hotels, etc.	
Arizona		Imitations labeled. Hotels, etc.	
Arkansas		Imitations labeled. Hotels, etc.	
California	Dairy bureau.....	Labeled "substitute" with ingredients.	
Colorado	Dairy commissioner..	No coloration or sale as genuine. Hotels, etc.	Imitation brand-ed.
Connecticut	Dairy commissioner..	No coloration. Labeled. Hotels, etc.	
Delaware		No coloration. Labeled. Hotels, etc.	
District of Colum-bia, Florida	District health officer.	Imitations labeled.....	
Georgia		Sale as genuine prohibited. Hotels. No coloring. Labeled. Hotels, etc.	Same as for butter.
Idaho		No coloration. Labeled true name.	
Illinois	Food commissioner..	No coloring. Labeled. Hotels, etc.	
Indiana		Labeled "oleomargarine." Hotels, etc.	
Iowa	Dairy commissioner..	No coloration. Labeled. Hotels, etc.	Same as for butter.
Kansas			
Kentucky		Imitation labeled.....	
Louisiana		Imitation labeled.....	
Maine		Imitation prohibited	
Maryland		No coloration or sale as genuine. Hotels, etc.	
Massachusetts	Board of agriculture..	No coloration. Labeled. Hotels, etc.	Imitations la-beled.
Michigan	Dairy and food com-missioner.	Imitations labeled with ingredi-ents. Hotels, etc.	Imitation and filled cheese prohibited.
Minnesota	Dairy and food com-missioner.	No coloring or sale as genuine. Ho-tels, etc.	Same as for butter.
Mississippi		Imitations labeled.....	
Missouri	Board of agriculture..	No coloring. Labeled. Hotels, etc.	
Montana		Imitations labeled. Hotels, etc..	
Nebraska	Food commission..	No coloration. Labeled. Hotels, etc.	Same as for butter.
Nevada		Imitations labeled.....	
New Hampshire		No coloration. Labeled. Hotels, etc.	Same as for butter.
New Jersey	Dairy commissioner..	No coloration. Labeled.....	Same as for butter.
New Mexico			
New York	Board of agriculture..	No coloration. Labeled. Hotels, etc.	Imitations pro-hibited.
North Carolina	State board of agri-culture.	Labeled, with ingredients	
North Dakota	Dairy commissioner..	No coloration. Labeled. Hotels, etc.	Filled cheese la-beled.
Ohio	Dairy and food com-missioner.	No coloration. Ingredients on label. Hotels, etc.	Same as for butter.
Oklahoma			
Oregon		Record of sales.....	Record of sales ..
Pennsylvania	Dairy and food com-missioner.	No coloration. Labeled. Licenses. Hotels, etc.	Imitation or fill-ed cheese pro-hibited.
Rhode Island		Labeled "oleomargarine"	
South Carolina		No coloration. Labeled. Hotels, etc.	Same as for butter.
South Dakota		Must be colored pink and labeled ..	
Tennessee		No coloration. Labeled ..	
Texas			

TERRITORIES RELATING TO THE PURITY OF DAIRY PRODUCTS.

Branding or labeling of cheese.	Adulterated or unwholesome milk.	Milk standard.		Other provisions.
		Fat.	Total solids.	
		Per cent.	Per cent.	
Three grades.....	Prohibited. State inspection.			
Two grades branded.	Prohibited. Skimmed as such. Local inspectors.			Process butter. Imitations prohibited in State institutions.
	Prohibited. Skimmed labeled.			
	Prohibited. Skimmed labeled. Licensees.	3.5	12.5	
	Prohibited. Skimmed labeled. Prohibited. Skimmed prohibited.	3	12	
Skimmed cheese labeled.	Prohibited. Skimmed labeled. State licensees.	3	12.5	Injurious materials prohibited.
	Prohibited. Skimmed prohibited.			
	Prohibited. Skimmed labeled. Local inspectors.	3	12.5	
	Prohibited. Skimmed labeled. Local inspectors.	3.5	12.5	Chemical preservatives prohibited. Condensed milk regulated.
Full cream cheese branded.	Prohibited. Skimmed labeled. Local inspectors.	3.7	13	Condensed milk regulated.
	Prohibited. Skimmed labeled. Local inspectors.	3	12.5	Process butter. Chemical preservatives prohibited.
Two grades.....	Prohibited. Skimmed labeled. State licenses.	3.5	13	Process butter. Chemical preservatives prohibited.
Skimmed cheese labeled.				
	Prohibited. Skimmed labeled.		13	
	Prohibited. Skimmed labeled. Local licenses.		12	
Full cream and skimmed cheese labeled.	Prohibited. Local inspectors. Skimmed as such.			
	Prohibited. Skimmed labeled. or prohibited.	3	12	Imitations in State institutions prohibited. Injurious acids, etc. Condensed milk.
Skimmed and other grades labeled.	Prohibited. Skimmed labeled.	3	12	Process butter.
Full cream, skimmed, and filled cheese labeled. Hotels, etc.	Prohibited. Skimmed labeled.	3	12	
	Prohibited. Dairy inspection.	3	12	Process and tub butter labeled.
Labeled, five grades.	Prohibited. Source of milk indicated.			Process butter. Chemical preservatives. State institutions.
	Prohibited. Skimmed labeled. Local inspectors.	2.5	12	
	Prohibited. Skimmed prohibited.	3	11.5	

III.—TABULAR SUMMARY OF LAWS OF THE STATES AND TERRITORIES

States.	Authorities for enforcement.	Imitation butter—oleomargarine, etc.	Imitation cheese.
Utah	Dairy and food commissioner.	No coloration. Labeled. Hotels, dealers, etc.	Filled cheese prohibited.
Virginia .....	.....	No coloration or sale as genuine. Hotels, etc.	Same as for butter.
Vermont .....	.....	Must be colored pink	Imitation prohibited.
West Virginia	Dairy and food commission.	Imitations labeled and colored pink.	.....
Washington	Dairy and food commission.	No coloration or sale as genuine. Hotels.	Filled and imitation cheese prohibited.
Wisconsin	Dairy and food commission.	No coloration. Labeled. Hotels, etc.	Filled and imitation cheese forbidden.
Wyoming .....	.....	.....	.....

RELATING TO THE PURITY OF DAIRY PRODUCTS—Continued.

Branding or labeling of cheese.	Adulterated or unwholesome milk.	Milk standard.		Other provisions.
		Fat.	Total solids.	
Skimmed cheese of special shape.	Prohibited.....	Per cent.	Per cent.	Injurious chemicals prohibited. State institutions. Injurious acids, etc., prohibited.
	Prohibited. Skimmed prohibited.	8 $\frac{1}{2}$	12.5	
Full cream and skinned cheese marked. Full cream and skinned cheese marked.	Prohibited. Skimmed labeled. State licensee. Adulterated, unwholesome or skimmed not sold as pure.			Process butter labeled. Imitations in State institutions. Chemical preservatives.

DIGEST OF LAWS BY STATES.

UNITED STATES.

Importation of adulterated food.—In connection with the act of August 30, 1890, regulating the inspection of meats for exportation from the United States, provisions were enacted making it unlawful to import into the United States adulterated or unwholesome food or drugs, or spirituous, vinous, or malt liquors containing any injurious ingredients. Penalty not over \$1,000 or imprisonment not over 1 year, or both, with forfeiture of the articles imported. The President, if satisfied that adulterated articles are being imported to an extent dangerous to the health and welfare of the people, may issue a proclamation suspending the importation of such articles. (Acts of 1890, ch. 889.)

Filled cheese.—Any substance, in imitation of cheese, made of milk or skimmed milk, with an admixture of butter, animal or vegetable fats, or other foreign compounds, is defined as "filled" cheese. Manufacturers of filled cheese must pay \$400 tax yearly; wholesale dealers, \$250; retail dealers, \$12. In addition, a tax of 1 cent per pound is collected from the manufacturer. Importers of filled cheese must pay, in addition to the regular import duties, an internal-revenue tax of 8 cents per pound. Detailed provisions are enacted regarding the collection of the tax, the stamping of packages to indicate payment, etc.

Every package of filled cheese must be branded as such, in letters not less than 2 inches long, on the top, bottom, and sides. Retail dealers shall sell only from original stamped or marked packages, and shall wrap the cheese sold to the consumer in a suitable package marked in accordance with rules to be established by the Commissioner of Internal Revenue. Retail and wholesale dealers in filled cheese must post conspicuously a sign, "Filled cheese sold here."

The enforcement of the law is in the hands of the Commissioner of Internal Revenue. Various fines and penalties are imposed for violations of the law. (Acts of 1897, ch. 887.)

Oleomargarine.—The United States law designates as oleomargarine all substances composed of animal or vegetable oil made in imitation of butter. Various such substances are enumerated. Manufacturers of oleomargarine are required to pay a tax of \$600 annually; wholesale dealers, \$480; retail dealers, \$48. In addition an internal-revenue tax of 2 cents per pound is imposed. Oleomargarine imported from foreign countries must pay an internal-revenue tax of 15 cents per pound in addition to import duty. Detailed regulations are provided regarding the method of collecting the tax and the use of stamps to indicate its payment.

Each package of oleomargarine must be marked and stamped in accordance with the regulations of the Commissioner of Internal Revenue.

Retail dealers shall use packages or wrappers similarly marked, and may sell only from original stamped packages.

The Commissioner of Internal Revenue is directed to employ an expert chemist and a microscopist, and may employ additional expert assistance to determine what substances should be subject to this tax.

Various penalties are imposed for different violations of the law. (Acts of 1886, ch. 840.)

Mixed flour.—The war-revenue act of 1898 levies an internal-revenue tax upon mixed flour. Mixed flour is defined as any product made from wheat mixed with any other grain or material or with the product of any other grain or material. Every person manufacturing or packing mixed flour shall pay an annual tax of \$12, and in addition a tax of 4 cents per barrel of not over 196 pounds, 2 cents per half barrel, and at the same rate for smaller packages. Detailed regulations are prescribed for the collection of the tax and the use of stamps to indicate payment. Each package must be marked "Mixed flour," in letters not less than 2 inches long, together with the name of the maker or packer, his place of business, and the name of the ingredients composing it. A card with similar information must be placed inside the package. Mixed flour imported from foreign countries must

pay a tax equal to the internal duty in addition to the import duties. Mixed flour exported from the United States is not subject to the tax, but must be properly marked. The Commissioner of Internal Revenue is instructed to make necessary regulations for enforcing the law. Various penalties are imposed for different violations of the act. (Acts of 1898, ch. 448, secs. 35-49.)

ALABAMA.

FOODS GENERALLY.

Adulterated food.—The law prohibits the mixing of any foreign matter with sugar, molasses, lard, butter, or other article of food so as to deteriorate its quality, or the sale of any such adulterated article. Penalty, \$50 to \$500, and, at discretion, not more than 6 months imprisonment.

Unwholesome food.—It is unlawful to sell tainted or unwholesome flesh or fish, or flesh of any animal dying otherwise than by slaughter, or slaughtered when diseased. Penalty, \$20 to \$200, and, at discretion, imprisonment not over 6 months.

Bread and crackers.—The manufacture or sale of bread or crackers made from sour or unwholesome flour is prohibited. Penalty, same as for adulterations. Every maker of such articles must have his name marked on each cracker or loaf of bread.

Adulterated liquors.—It is unlawful for any person to make or sell liquors adulterated by the mixture of any poisonous or unwholesome substance, or liquors containing any drug or oil. Penalty, \$250 to \$1,000. (Ala. Code 1896, secs. 5321-5328.)

Adulterated candy.—The manufacture or sale of candies adulterated with terra alba, barytes, talc, or other earthy substances, or with poisonous colorations or flavors or other injurious ingredients, is punishable by a fine of \$50 to \$500, and, at discretion, imprisonment not over 6 months. (Acts of 1896-97, ch. 525.)

DAIRY PRODUCTS.

Imitation butter.—The manufacture or sale of any article, in imitation of butter, which is not produced from unadulterated milk or cream, is forbidden, but oleomargarine may be made and sold in such a way as to show its true character, free from coloration and marked with its true name. Keepers of hotels, boarding houses, schools, and penal institutions must also conform to the law as regards boarders and others. Penalty, \$20 to \$100. (Acts of 1894-95, ch. 408.)

ARIZONA.

Adulterated food.—The adulteration or dilution, for sale as pure, of food, drink, or drug, or the sale as pure of such adulterated or diluted articles, is a misdemeanor. (Penal Code, secs. 606, 607.)

Unwholesome food.—The sale of tainted, decayed, spoiled, or otherwise unwholesome food, drink, drug, or medicine, with intent to permit the same to be eaten or drunk, is a misdemeanor.

Imitation butter.—Any manufacturer of an article, in imitation of butter, not made exclusively from milk or cream must distinctly stamp or mark it "Oleomargarine" in letters not less than one-fourth of an inch square. Retailers selling such articles must deliver to each purchaser similar printed labels. Wholesale or retail dealers in such articles must post conspicuously printed notices, "Oleomargarine sold here," in letters not less than 2 $\frac{1}{4}$ inches square. Hotel and boarding-house keepers, etc., serving oleomargarine must inform each guest or customer that the article is not genuine. Violators of the law are guilty of a misdemeanor. (Penal Code, secs. 622, 623-624.)

ARKANSAS.

Unwholesome food.—The law prohibits the sale of deteriorated or diseased or decayed meat, vegetables, or provisions, without making the same fully known to the purchaser, or of the flesh of any animal dying otherwise than by slaughter, or of any animal slaughtered when diseased, or of the meat of any calf which was killed before 6 weeks old. Penalty not exceeding \$500 or imprisonment not exceeding 6 months. (Acts of 1893, ch. 161.)

Imitation butter.—Butter substitutes and adulterated butter, not made wholly from milk or cream, shall have the words "Adulterated butter," "Oleomargarine," or "Butterine," or such other name as shall properly describe it, marked in

letters not less than 1 inch in length upon the top and side of every package. Retail dealers are similarly required to label the outside wrapper of each package sold in printed letters not less than one-half inch in length. It is also unlawful to remove or deface labels or to change the contents of packages. Penalty, \$50 to \$500. Hotel and restaurant or boarding-house keepers who serve butter substitutes shall have the dish holding it similarly marked. Violators of this provision are fined \$5 to \$100. (Acts of 1885, ch. 127.)

CALIFORNIA.

FOODS GENERALLY.

Adulteration of food and drugs.—The adulteration of any article of food or of any drug, or the sale of such adulterated articles, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or of such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold, if not injurious to health, if containing all necessary and no unnecessary ingredients, and if distinctly labeled as such. Every person manufacturing or selling any drug or article of food shall furnish anyone interested, on request and payment, with a sample sufficient for analysis. Penalty for violation, \$25 to \$100, or imprisonment 30 to 90 days, or both, together with costs of inspection and analysis. (Statutes of 1895, ch. 76.)

Honey.—No person shall sell honey extracted by bees from natural sources and adulterated with glucose or any other substance, nor any article as honey which is not the natural product of the bee. Penalty, \$100, or imprisonment 3 months, or both. (Statutes of 1895, ch. 104; Statutes of 1897, ch. 15.)

Olive oil.—Every person who manufactures imitation olive oil must label each bottle or other container with the words "Imitation olive oil" in large type and with his name and the names and percentages of the ingredients. It is unlawful to forward, sell, or have in possession imitation olive oil not so marked. Retail purchasers must be informed of the character of the imitation and must be furnished a statement or label. No person shall sell oil manufactured out of the State as manufactured within the State. The State board of horticulture and the State analyst shall enforce the law. Penalty, \$100 to \$500, or imprisonment 30 days to 6 months, or both. (Statutes of 1893, ch. 177.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of adulterated or unwholesome milk, or of milk drawn from cows having such diseases as cause them to become feverish, or from cows within 15 days before or 5 days after parturition. Penalty, for first offense, \$25 to \$50, or imprisonment 25 to 50 days; for subsequent offenses, \$50 to \$100, or imprisonment 50 to 100 days, or both.

The State dairy bureau is empowered to inspect dairies and creameries and to require them to be put into sanitary condition. It is required to take prompt measures to suppress any contagious disease affecting dairy cattle. Whenever in the judgment of the veterinary surgeon of the State it is necessary, animals may be slaughtered to protect the public health. (Statutes of 1897, ch. 75.)

Cheese.—Cheese manufactured from pure milk and containing not less than 30 per cent of butter fat is considered "full-cream cheese;" if made from pure milk and containing 15 per cent of butter fat, it is "half-cream cheese;" and if made from pure skimmed milk, it is "skimmed cheese." All cheese shall be thus branded according to its true quality with brands furnished by the State dairy bureau. Penalty, same as in case of milk. (Statutes of 1897, ch. 76.)

Imitation butter and cheese.—No article made in imitation of butter or cheese, and containing any fat or oleaginous substance not produced from unadulterated milk, shall be manufactured or sold, unless on each package is marked the words "Substitute for butter" or "Substitute for cheese," together with the name and location of the manufacturer and the names and percentages of the various ingredients. Every person having possession of imitation butter or cheese is presumed to know that it is imitation. No person shall ship and no common carrier shall

receive any unmarked imitation. Keepers of hotels and boarding houses must notify their guests if such imitations are used, and no such imitations are permitted in any charitable or penal institution receiving assistance from the State. Penalty, for first offense, \$50 to \$150, or imprisonment not over 30 days; for subsequent offenses, \$150 to \$300, or imprisonment 30 days to 6 months.

Dairy bureau.—The governor is to appoint 3 citizens who have had practical experience in the dairy business as a dairy bureau to enforce this and other similar acts. (Statutes of 1897, ch. 75.)

Process butter.—No person shall manufacture or sell any butter made by boiling, melting, or renovating stale or decomposed butter in such a way as to make it resemble pure butter, unless the package containing it shall be marked, in letters not less than one-half inch long, with the words "Process" or "Renovated" butter. (Statutes of 1899, ch. 25.)

COLORADO.

FOODS GENERALLY.

Adulteration of food and drugs.—It is unlawful to adulterate any article of food or any drug, or to sell such adulterated articles, or to mix, color, or powder any article of food or drug so as to make it injurious to health or to injure its quality. Articles which are thus mixed, colored, or powdered, but not rendered injurious, may be sold under their true name, with the notice of their mixture or impurity properly marked upon them, and with notice to each purchaser. Penalty, fine not over \$300, or imprisonment not over 1 year. (Laws, 1893, p. 393, secs. 61-65; compare Laws, 1887, p. 16, secs. 8-5.)

Liquors.—It is unlawful to adulterate spirituous liquors with any poisonous or injurious substance, or to import such adulterated liquors, or to sell them. The adulteration of vinous or malt liquors is also prohibited. Each package of vinous or malt liquors shall be stamped with the manufacturer's name and with the appropriate name of the contents, together with the word "Pure." Penalty, \$100 to \$300, or imprisonment not over 6 months, or both. (Laws, 1887, p. 18; Laws, 1895, p. 208.)

Glucose.—No person shall mix glucose with sirup, honey, or sugar without marking on each package its true name and the percentage of glucose, nor shall such mixtures be sold without notice to the buyer of their character. Penalty, \$50, or imprisonment not over 3 months. (Laws, 1893, p. 393, sec. 66.)

Unwholesome food.—It is unlawful to sell the flesh of any diseased animal or of any animal dying otherwise than by slaughter, or any provisions whatever which are decayed or injured. Penalty, not over \$1,000, or imprisonment not over 2 years, or both. (Laws 1887, p. 15; compare 1893, p. 392, sec. 60.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell milk adulterated with water or any foreign substance, or milk drawn from diseased cows or otherwise unwholesome, or milk from cows fed upon garbage or upon any substance in a state of fermentation or otherwise deleterious. Milk from which cream has been taken or from which stripplings have been withheld may be sold only with notice to the purchaser. Any county, city, or town may appoint a milk inspector to enforce the law. Penalty, not over \$500, or imprisonment not over 1 year, or both. (Laws, 1887, p. 15, sec. 2; Laws, 1893, p. 394, secs. 69-72.)

Butter and cheese.—It is unlawful to manufacture or sell any article not produced wholly from unadulterated milk or cream in imitation of cheese or yellow butter; but oleomargarine may be sold in a separate form, free from coloration or ingredient which causes it to look like butter. It is also unlawful for hotel keepers, public or private schools, or charitable or penal institutions to furnish imitation butter or cheese to their guests or inmates.

Branding of cheese.—The State dairy commissioner shall furnish uniform stencils for branding cheese. Cheese containing 85 per cent of butter fat in comparison with the total solids shall be branded "Colorado full-cream cheese," that containing less fat shall be branded "Skimmed cheese," and cheese into which foreign fats or impure butter have been introduced shall be branded "Imitation cheese." Penalty for violation, \$100 to \$500, or imprisonment not exceeding 1 year.

Dairy commissioner.—The governor shall appoint a dairy commissioner, who shall hold office for 2 years and receive \$1,200 a year. He may employ assistants, and they, together with inspectors of milk, may enter any place to take samples for analysis. An appropriation of \$2,000 yearly is made for the enforcement of the law. (Laws, 1895, ch. 19.)

CONNECTICUT.

FOODS GENERALLY.

Adulteration of food.—The law prohibits the manufacture or sale of any article of food or drink, used by man or cattle, which is adulterated or misbranded. An article is deemed adulterated if any substance be mixed or packed with it so as to reduce or injuriously affect the quality or strength, if any inferior substance is substituted in it; if any valuable constituent has been abstracted; if it be imitation and sold under the name of another article; if it is colored, coated, polished, or powdered whereby damage is concealed, or if it is made to appear of greater value than it is; if it contains poisonous ingredients; or if it contains antiseptics not evident to the purchaser. Mixtures under their own names, or articles labeled so as to show clearly that they are mixtures are excepted, as well as those to which any ingredient is added, necessarily and not fraudulently, in preparation or as an article of commerce.

Drugs.—Every person who shall adulterate or mix a foreign substance with a drug or medicinal preparation, so as to weaken its medicinal effect, or shall sell such drug, shall be fined not less than \$10 nor more than \$100. (Gen. Stats., 1888, sec. 3129.)

Enforcement.—The State agricultural experiment station shall make analysis of all suspected food products procured by its agents or the dairy commissioner, and if it finds that an adulterated product has been on sale, the dairy commissioner shall transmit the facts to the grand jury or prosecuting attorney of the town in which the product was found. The experiment station may adopt standards for articles where standards are not specified by law. The proper officers are granted access to any suspected place and right to compel samples to be sold to them. Penalty, not more than \$500, or 1 year imprisonment. (P. Laws, 1895, ch. 235; amended by P. Laws, 1899, ch. 22.)

Vinegar.—No person shall make as cider vinegar any vinegar not produced wholly from apples, or shall add to any vinegar any drug, hurtful or foreign substance, or any coloring matter or acid. Vinegar must have an acidity equivalent to not less than 4 per cent of absolute acetic acid, and cider vinegar must not contain less than 2 per cent of cider vinegar solids. Every maker must brand or paint upon each package his name, place of manufacture, and the true kind of vinegar contained. No person shall sell or receive an order for the sale or delivery of vinegar not conforming to these same requirements.

The dairy commissioner is charged with enforcing the law and has the usual powers of entering, taking samples, and analyzing. If vinegar be found adulterated, the proper local prosecuting officer must bring suit. Penalties: For manufacturers, \$50 for first offense; \$100 and imprisonment 30 days for second offense; for dealers, \$10 and \$50, respectively. (P. Laws, 1897, ch. 67.)

Molasses.—No person shall adulterate molasses with salts of tin, terra alba, glucose, dextrine, starch, sugar, corn syrup, or other preparation of starch, or shall sell or receive orders for such adulterated molasses. Penalty \$500 or 1 year imprisonment, or both.

The dairy commissioner shall have charge of the enforcement of the law. He shall have access to all suspected places, and may take samples and have them analyzed by any State chemist. If the molasses is adulterated, he shall make complaints to the local prosecuting officer. (P. Laws, 1889, p. 148, ch. 238.)

Sugar.—A special provision prohibits the adulteration of sugar with various enumerated substances. (Gen. Stats., sec. 2650.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. Penalty not more than \$100. (P. Laws, 1895, ch. 183.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell milk adulterated with water or any foreign substance, or from which cream or strippings have been withheld. Skimmed milk may be sold if each can or package is marked "Skimmed milk," in letters not less than 1 inch long. The law also prohibits the bringing of sour or tainted milk to a butter or cheese factory, or the sale of milk from a cow affected with tuberculosis or other blood disease. Penalty, \$25 to \$100. (Gen. Stats., secs. 2658-2664.)

Imitation butter.—Any article in semblance of butter, not made wholly from the milk of cows, shall be deemed imitation, and the words "butter," "dairy," "creamery" shall not be used in describing it. No person shall manufacture or sell a product or compound in imitation of yellow butter. The sale of oleomar-

garine is permitted under the following conditions: It must be free from all coloration. The seller must maintain in plain sight over the entrance to his premises a sign, to be furnished by the State dairy commissioner, with a notice in plain letters not less than 4 inches long that imitation butter is sold. Delivery wagons used in handling imitation butter must be so marked. No baker or seller of food shall sell any article containing imitation butter unless he maintains a similar sign. Keepers of hotels, boarding houses, etc., who use imitation butter must post a sign to that effect in sight of all guests. Packages containing imitation butter must be marked on the outside and on the cover, in letters not less than 2 inches long, with the true name. The seller must orally inform each buyer of the character of the article. Every person selling or serving to guests imitation butter must register his name and place of business in a book kept by the dairy commissioner.

Railroad and express companies are required to furnish the dairy commissioner on request with details regarding any consignment of imitation butter.

When tub imitation butter is sold in the form of bricks or balls, each such package must be labeled with its true character.

Boarding-house keepers violating the act are subject to a fine of \$25 or imprisonment not over 30 days, or both, for the first offense. Other violators of the law may be fined not more than \$100 or imprisoned not more than 60 days, or both, for the first offense. The penalties are doubled for subsequent offenses. (Gen. Stats., secs. 2614-2619, as amended by Laws of 1893, chap. 114, and L. 1895, ch. 32.)

Dairy commissioner.—The governor is to appoint a dairy commissioner, who shall hold office for 2 years; he may appoint a deputy. These officers are to enforce the law, and have the right of access to places where they suspect imitation butter to be made or sold; they may take samples for analysis by the State experiment station. (*Ibid.*)

DELAWARE.

Candy.—It is unlawful to manufacture or sell candy adulterated with terra-alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (Laws, 1899, ch. 267.)

Imitation butter.—The law prohibits the manufacture or sale of any article in imitation of butter which contains fat or oleaginous substance not made from unadulterated milk or cream. Oleomargarine may be sold in such a manner to advise the consumer of its character, being free from coloration, and marked with its true name by a placard with letters not less than 1 inch long on the exposed surface of every open package. Penalty, \$50 to \$250 or imprisonment not exceeding 1 year. Any justice of the peace may on complaint issue a warrant to inspect suspected places, and the officer may take samples, leaving one with the person in charge of the place and forwarding the other to the State chemist. The chemist shall analyze the sample and notify the State attorney-general as to the result. In case of failure to convict, the costs are paid by the county. (Laws, 1895, chap. 209.)

DISTRICT OF COLUMBIA.

Adulteration of food and drugs.—The adulteration of any article of food or of any drug, or the sale of such adulterated article, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health.

The law also contains specific definitions as to the standards of milk, cream, butter, coffee, lard, tea, vinegar, spices, wines, fruit juice, malt liquors, glucose, flour, bread, and olive oil.

Foods of an inferior quality may be sold if the order calls for such quality, and it is not deemed adulteration to mix harmless materials with no intent of fraud if the fact of mixture is made known to the purchaser.

The enforcement of the law is under the direction of the health officer of the District of Columbia. The representatives of his office may demand samples of any goods offered for sale upon payment. (Stats. U. S., 1898, chap. 25.)

Milk.—Every dairy must secure a permit from the health officer of the District, and he is required to secure proper water supply, drainage, ventilation, and cleanliness, and to see to it that cattle suffering from contagious diseases are isolated. No person who is suffering from dangerous contagious disease, or who has knowingly been exposed to it, shall work in a dairy. All persons selling milk must keep the names of the dairymen furnishing it conspicuously posted.

No adulterated or unwholesome milk shall be sold; nor milk which contains less than 9 per cent of solids, not fat, and $\frac{3}{4}$ per cent of fat; nor cream which contains less than 20 per cent of butter fat. Skimmed milk must contain at least 9.8 per cent of solids, and must be distinctly marked on the container "Skimmed milk."

Penalty for first offense, \$5 to \$25 or imprisonment not over 30 days, with higher penalties for subsequent offenses. (Stats. U. S., 1895, chap. 164, as amended by Stats., 1898, chap. 25.)

FLORIDA.

Adulteration of food.—It is unlawful to adulterate for sale or offer for sale a food substance adulterated with any article injurious to health. Penalty, imprisonment not over 1 year or fine not over \$300.

Unwholesome food.—The sale of tainted or unwholesome food or drink, without making its character known to the buyer, is subject to imprisonment not over 6 months and fine not over \$200. The sale of veal from any calf killed under the age of 4 weeks is punishable by fine not over \$200.

Adulterated drugs.—The adulteration of any drug or medicine or the sale of such adulterated article is subject to fine not exceeding \$400 or imprisonment not over 1 year. Registered pharmacists guilty of the offense shall be stricken from the register.

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (Laws, 1897, No. 32.)

Adulterated liquors.—It is unlawful to adulterate liquors intended for drink with coccus indicus, vitriol, or other enumerated drugs, or with any injurious or poisonous substance. Penalty, imprisonment not over 3 years.

Imitation butter.—A person who sells as butter any spurious preparation, or a hotel or boarding-house keeper who offers such a preparation to his guests without giving notice of the fact, is subject to imprisonment not over 30 days or fine not over \$100.

(Rev. Stats., secs. 2659-2668).

GEORGIA.

FOODS GENERALLY.

Adulterated food.—It is unlawful to offer for sale an adulterated article of food or drink unless each package has a correct analysis attached, and unless notice of the fact of adulteration is given to each purchaser. Violation of the act is a misdemeanor. The enforcement is charged upon the grand jurors of the counties. (Penal code, sec. 468.)

Unwholesome food.—It is a misdemeanor to sell unwholesome provisions of any sort, or adulterated liquor, or the flesh of a diseased animal. (Penal code, secs. 466, 467.)

Adulterated drugs.—It is unlawful to adulterate any drug or medicine. A drug is deemed adulterated which does not correspond to the standard of the United States Pharmacopoeia, or of any other standard work by which it is recognized, or if it falls below its own professed standard. The State board of pharmacy is to enforce the law and has authority to take samples. (Penal code, 1895, secs. 483-484.)

Adulteration of wine.—It is unlawful to sell as "domestic wine" wine compounded from chemicals or otherwise, and not produced exclusively from grapes or other fruit grown in the State. (Laws, 1890-1891, p. 180; approved October 16, 1891.)

Candy.—It is a misdemeanor to adulterate candy with terra alba, barytes, talc, or any other mineral substance, or with poisonous colors or flavors or other injurious ingredients. (Laws of 1896, p. 84; approved December 24, 1896.)

DAIRY PRODUCTS.

Imitation butter and cheese.—Any article in the semblance of butter or cheese not produced wholly from pure milk or cream is declared imitation. No person shall mix animal fat or vegetable oil with butter or cheese, or shall color in any

way a mixture of such fats and oils so as to make it resemble genuine butter or cheese. No person shall sell imitation butter or cheese unless it be marked on the top and side of each package, in printed letters not less than 1 inch high, "Substitute for butter" or "Substitute for cheese;" nor have in his possession such a substitute not properly marked. Each retail purchaser must be given a printed statement that the article is imitation, with the name and address of the producer. Hotel and boarding-house keepers, etc., who serve imitation butter or cheese shall keep constantly posted conspicuously a card to that effect, printed in letters not less than 1 inch high. The violation of this act is a misdemeanor. (Laws of 1895, p. 68; approved December 16, 1895.)

Milk.—The law prohibits the sale of unwholesome or adulterated milk, or milk from which the stripplings have been held back, or milk from an animal having any disease. Buttermilk and skimmed milk may be sold as such only. The standard of milk is $\frac{3}{4}$ per cent of butter fat and $\frac{1}{2}$ of other solids. (Laws of 1895, p. 66.)

IDAHO.

Adulteration of food.—The adulteration or dilution of any article of food or drink or of any drug, or the offering for sale of such an adulterated article as though pure, is a misdemeanor.

Unwholesome food.—It is unlawful to offer for sale an article of food or drink or drug which is tainted, spoiled, or otherwise unwholesome, or to offer for sale any animal that has been confined for 48 hours or more without proper food or for 24 hours without water. (Revised Statutes, 1887, secs. 6918-6920.)

Imitation butter.—The manufacture and sale of oleomargarine, butterine, and adulterated butter are permitted only when marked as such. The sale of these articles as butter, or without being marked, is considered a misdemeanor. (Revised Statutes, 1887, sec. 6917.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. (Laws of 1899, p. 398.)

Vinegar.—It is unlawful to manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients, or cider vinegar which is not the legitimate product of pure apple juice. All vinegar, except cider vinegar, shall have an acidity equal to 4.5 per cent of acetic acid, and cider vinegar shall contain not less than 2 per cent of cider vinegar solids. Every barrel of vinegar must be conspicuously marked with the name and the place of business of the manufacturer, the kind of vinegar, and the percentage of acetic acid. Violation of the law is a misdemeanor. (Laws of 1899, p. 388.)

Imitation butter.—It is unlawful to coat or color with annatto or otherwise any substance designed as a substitute for butter in such a way as to make it resemble butter, or to compound foreign fats with butter for the same purpose. It is unlawful to sell imitation butter made in violation of this provision. Lawfully manufactured substitutes shall be marked on the top and side of each package, showing their true character, in letters not less than three-fourths of an inch long. Each retail purchaser must be informed of the character of the article. (Laws of 1899, p. 392.)

ILLINOIS.

FOODS GENERALLY.

State food commissioner.—The governor is to appoint a State food commissioner, whose term of office is 4 years and salary \$3,500. The commissioner may appoint one assistant, who shall be an expert in dairy products, and another known as the State analyst. The salaries of each are \$1,800. Not over 6 inspectors may be appointed. The food commissioner is to enforce all laws relating to foods and dairy products and to prosecute violations through the prosecuting attorneys of counties, whose duty it is to render all possible assistance. The inspectors are given power to enter any dairy, store, or other place where foods are kept, and to open any package and to take samples. They shall mark and seal each sample in the presence of the person in charge, offering him its value, and shall on request furnish him a duplicate sealed sample. Samples thus taken shall be analyzed by the State analyst, and the State board of health may also submit to him samples for examination. The State analyst is forbidden to furnish any person a certificate as to the purity or excellence of an article of food. The commissioner may distribute to the newspapers a monthly bulletin containing the results of his inspections.

Adulterated food.—It is unlawful to manufacture for sale or to offer for sale any food which is adulterated. An article is deemed adulterated if any substance

has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it is coated, powdered, or otherwise made to appear of greater value than it really is; if it contains an added substance injurious to health; if it contains any decomposed, tainted, or unwholesome animal or vegetable substance, or if it is the product of an animal which has died otherwise than by slaughter. A compounded article which does not contain injurious ingredients, if sold under a distinct name and so labeled as to plainly indicate that it is a mixture, shall not be deemed adulterated. Manufactured articles of food must be marked with the name of the manufacturer or dealer and his place of business.

Vinegar.—No vinegar shall be sold as cider vinegar which is not the product of pure apple juice and which does not contain 1½ per cent of cider vinegar solids. All vinegar made by fermentation shall be branded with the fruit or substance from which it is made, and shall contain not less than 1½ per cent of solids contained in the fruit from which it is made, nor less than 2½ tenths of 1 per cent of mineral matter. Vinegar made from distilled liquor shall be branded "distilled vinegar." All vinegar shall be made wholly from fruit or grain, shall contain no foreign substance, and shall contain not less than 4 per cent of acetic acid. The manufacture or sale of vinegar containing lead, mineral acid, or other ingredient injurious to health is unlawful. Each package containing vinegar shall be marked with the name and place of business of the manufacturer or dealer.

Ice.—It is unlawful to sell ice containing any decomposed or tainted animal or vegetable substance or other injurious ingredient. The water contained in ice must be up to the standard of purity of water for domestic purposes.

Candy.—It is unlawful to adulterate candy with terra alba, barytes, talc, or other mineral substance, or with poisonous colors or flavors, or other injurious ingredients. Violation a misdemeanor.

Canned fruits and vegetables.—No packer or dealer in canned fruits and vegetables shall sell such articles unless they are free from injurious substances, and unless they are marked with the name and address of the packer or dealer. All soaked or bleached goods put up from products dried before canning shall be so plainly marked.

Fruit jellies and jams.—It is unlawful to manufacture or sell as genuine any compound containing glucose, dextrine, or other foreign substance and colored in imitation of fruit jelly or jam. Every package containing such compounds shall be labeled "imitation," with the name and address of the manufacturer or dealer, and shall be free from harmful ingredients.

Extracts, chocolate, etc.—Flavoring extracts containing more than one principle must be labeled with the name of each or with the name of the inferior principle. Extracts which must necessarily be made artificially shall be labeled "artificial." The ingredients which may be used in prepared chocolate, cocoa, and cocoanut are defined in the law.

Penalties.—Whoever shall falsely brand a product covered by the preceding provisions, or shall remove or deface a brand, or shall violate any of the provisions of the act, is subject to a fine of \$25 to \$200, or imprisonment not exceeding 90 days, or both. The taking of orders or the making of contracts for the future delivery of any article is deemed a sale.

(Laws of 1899, p. 868; approved April 24, 1899.)

Lard.—No article which contains any ingredient except pure fat of swine shall be sold under the label "pure," "refined," or "family," or unless each package is marked "compound lard" in letters not less than one-half inch long. Penalty, \$20 to \$50 for first offense; subsequent offenses, \$75 to \$200. (Laws, 1889, p. 111; approved June 8.)

Veal.—The law prohibits the killing of any calf less than 4 weeks old, or the sale of its flesh for food. Penalty, \$25 to \$50 or imprisonment not over 30 days, or both. (Laws, 1887, p. 307; approved June 16.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell milk adulterated with water or any foreign substance, or from which the cream has been taken, without informing the purchaser of the fact, or from which the stripplings have been withheld, or milk drawn from a diseased cow or milk so tainted or corrupted as to be unwholesome; or to deliver such milk to any cheese or butter factory without informing all concerned of the fact. The law also prohibits taking any part from milk, after delivery to a cheese or butter factory for manufacture on account of the person supplying it, or adding any foreign substance to it by which it shall become unwholesome. It is unlawful to keep cows in an unhealthy condition or to give them food that produces unwholesome milk. In cities skimmed milk may be sold only in cans

plainly marked as such. The milk standard is 12 per cent of milk solids and 3 per cent of butter fat. Each retailer of milk in cities must have every can and every vehicle marked with his name and the locality where the milk is produced. Different penalties are imposed for various classes of violations. (Rev. Stats., 1898, ch. 38, secs. 207a-207f, passed in 1879 and 1881; Laws of 1897, p. 268.)

Butter and cheese.—It is unlawful to color or powder any substance designed as a substitute for butter in such a way that it shall resemble pure butter, or to combine animal fat or similar substances with butter so as to make the product resemble genuine yellow butter. The sale of such a prohibited imitation is also unlawful. Manufacturers of substitutes for butter shall distinctly mark each package "oleomargarine" or some similar prescribed phrase, in letter not less than three-fourths of an inch long. Retail sellers of imitation butter must inform each purchaser as to its character. No person shall ship or forward or have in possession, except for family use, imitation butter not properly marked. Penalty, \$50 to \$200, or imprisonment not over 60 days, or both. (Law of 1897, p. 8.)

Another law prohibits the manufacture or sale as butter or cheese of any product not made exclusively from unadulterated milk or cream. Penalty, \$25 to \$200. (Laws of 1881, p. 74.)

No person shall mix oleomargarine or any other foreign substance with butter or cheese without distinctly marking on the package the true names and percentages of the constituents, and no person shall sell such a compound without informing the buyer as to its composition. Penalty for first offense, \$25 to \$200; for second offense, \$100 to \$200, or imprisonment 1 to 6 months, or both. State attorneys are charged with the enforcement of the law. (Laws of 1881, p. 75.)

INDIANA.

FOODS GENERALLY.

Adulteration of food and drugs.—The adulteration of any article of food or of any drug, or the sale of such an adulterated article, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if an inferior substance has been substituted in it; if a valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains an added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, if containing all necessary and no unnecessary ingredients, and if distinctly labeled as such.

Enforcement.—The State board of health and the State health officers are directed to enforce this law. The State board shall adopt rules for carrying it out, and State, county, and local health officers shall act as inspectors. Every manufacturer or dealer is required to furnish to proper officers a sample of any article on receipt of its value.

Penalty for violation of the act, fine not over \$100. Adulterated articles shall be forfeited and destroyed under the direction of the court. (Laws of 1899, chap. 121.)

Adulterated liquors.—This act provides further that the adulteration of liquor intended for drink, or the sale of such adulterated liquor, shall be subject to a penalty of not less than \$100 nor more than \$500, the adulterated article to be forfeited.

Adulteration of vinegar.—It is unlawful to sell as cider vinegar an article not the legitimate product of pure apple juice or containing any foreign substances. All vinegar shall be free from lead, copper, sulphuric acid, or other injurious substances or artificial coloring matter. All vinegar shall have an acidity equal to not less than 4 per cent of absolute acetic acid, and cider vinegar shall contain in addition not less than 2 per cent of cider vinegar solids. No vinegar shall be branded as fruit vinegar unless it is made exclusively from some fruit. Every person making cider vinegar who is not a domestic manufacturer thereof shall brand on each cask or package his name and residence, the date of manufacture, and the words "cider vinegar." (Horner's Rev. Stats., 1897, secs. 6610, 6611.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. (Laws of 1899, ch. 156.)

Unwholesome food.—The law prohibits the sale of diseased or unwholesome provisions, or of provisions purporting to be other than what they are, or of meat from any calf killed before the age of 4 weeks. Penalty, \$10 to \$500, to which may be added imprisonment 10 days to 6 months. It is unlawful to kill for the purpose of selling or to offer for sale meat taken from any diseased or injured animal. Penalty, \$50 to \$500, to which may be added imprisonment not more than 6 months. (Horner's Rev. Stats., secs. 2069, 2070.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk diluted with water or otherwise adulterated, or from which the cream has been taken, or from which the stripplings have been withheld, or of milk which is the product of a sick animal, or of an animal fed upon distillery or brewery refuse or upon any injurious substance. Penalty, \$50 to \$500. (Horner's Rev. Stats., 1897, sec. 2071.)

Oleomargarine.—Whoever sells or keeps at any hotel or boarding house imitation butter not made from pure milk or cream without labeling it "oleomargarine," in large letters, shall be fined not less than \$10 nor more than \$50. It is unlawful to use any injurious material in the manufacture of cheese or butter Penalty, \$50 to \$500. (Horner's Rev. Stats., 1897, secs. 2190-2191.)

IOWA.

FOODS GENERALLY.

Adulteration of food.—The law prohibits the adulteration of any substance intended for food or drink. Penalty, imprisonment not over 1 year or fine not over \$500. (Rev. Stats., sec. 4980.)

More detailed sections provide that no person shall mix, color, stain, or powder an article intended for food or drink with any ingredient, whether injurious to health or not, for the purpose of gain. It is also unlawful to sell such an adulterated article unless the purchaser is informed as to its true character, and unless each package is properly marked. Penalty for first offense, \$10 to \$50; second offense, \$25 to \$100, or imprisonment 30 days; subsequent offenses, \$500 to \$1,000 and imprisonment 1 to 5 years. (Rev. Stats., secs. 4984-4988.)

Adulterated drugs.—The law prohibits the adulteration of any drug or medicine in such a way as to lessen its efficiency, change its operation, or make it injurious, or the mixing, coloring, staining, or powdering of any drug or medicine so as to affect it injuriously. Knowingly to sell such adulterated drugs is also prohibited, and registered pharmacists are held responsible for the quality of all drugs sold except those in the original packages and patent medicines. The law does not apply to necessary mixing in compounding of drugs and medicines. Penalty, imprisonment not over 1 year or fine not over \$500. (Rev. Stats., secs. 2592, 4983, 4985.)

Unwholesome food.—It is unlawful to sell diseased or unwholesome provisions without making their character known to the buyer. Penalty, imprisonment not over 30 days or fine not over \$100. (Rev. Stats., sec. 4981.)

Glucose.—It is unlawful to mix glucose or grape sugar with syrup, sugar, or any other article without distinctly marking the product with the true percentage of such adulteration, or to sell such an adulterated article without informing the buyer as to its true character. Penalty, same as for adulterated food generally. (Rev. Stats., sec. 4987.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (Laws of 1896, ch. 112.)

Canned goods.—Every can of fruit or vegetables packed or sold in the State must bear the name and place of business of the packer or wholesale dealer, together with a term indicating accurately the quality of the contents.

"Soaked" goods or goods put up from products dried before canning must be plainly marked "soaked" in letters not less than one-half inch high. Penalty for violation, \$50 for retail dealers, \$500 to \$1,000 for wholesale dealers or packers. (Rev. Stats., secs. 4994-4997.)

Adulterated lard.—Lard rendered from swine which have died from disease must be so plainly marked on each package, or if sold without package the purchasers must be informed of its character. Penalty for violation, \$5 to \$10, or imprisonment not over 30 days. It is unlawful to manufacture or sell lard containing any ingredients except the pure fat of healthy swine, in a package bearing the words "pure," "refined," or "family;" or unless each package is labeled

in letters not less than one-half inch long with the words "compound lard," and the proportions of the ingredients. Penalty, \$20 to \$50 for first offense; \$50 to \$100 for subsequent offenses. (Rev. Stats., secs. 4993-4994.)

DAIRY PRODUCTS.

State dairy commissioner.—The governor shall appoint a dairy commissioner having practical knowledge of the business, for a term of 2 years. It shall be his duty to enforce the laws relating to dairy products, to furnish tests for milk, etc.

Milk.—It is unlawful to sell or deliver impure or adulterated milk, or milk from which the stripplings have been withheld, or milk taken from animals having disease; but skimmed milk may be sold as such. It is also unlawful to keep cows used for dairy purposes in an unhealthy or crowded stable, or to feed them food which produces unwholesome milk, such as distilled glucose or brewery waste. The addition of water or any substance to milk is deemed adulteration. Milk containing less than 3 per cent of butter fat or 12½ per cent of milk solids is deemed skimmed or adulterated. The standard for cream is 15 per cent of butter fat. Penalty, \$25 to \$100 and liability for double damages to the person against whom the fraud is committed.

Every person selling milk or cream from a wagon or store must obtain a written permit from the State dairy commissioner, and shall pay annually for each wagon or store a fee of \$1. Milk dealers and persons operating creameries, cheese factories, or dairies shall keep their premises clean and in a hygienic condition, and shall return from time to time to the dairy commissioner such reports and statistics as may be required. The State dairy commissioner shall furnish to creameries and cheese factories proper test tubes, pipettes, and other instruments for testing the quality of milk. The commissioner may appoint agents in any city having over 10,000 inhabitants, who shall have power to collect samples.

Imitation butter and cheese.—Every article in imitation of pure butter not made exclusively from milk or cream is deemed imitation. Every article designed to be used in place of cheese and not produced exclusively from milk or cream is imitation cheese. No person shall manufacture, sell, take orders for, ship, or transport such imitation products not properly marked. Such articles, if not yellow, and not colored in imitation of butter or cheese, may be sold and transported if each package is marked distinctly with the words "substitute for butter" (or for cheese) in letters not less than 1 inch long. Keepers of hotels and boarding houses who use these imitations shall keep constantly posted before each table a notice to that effect. Each retail purchaser must be notified of the character of the article at the time, and must be furnished with a printed label, together with the name and place of business of the maker.

Any person having in his possession imitation butter or cheese, except for the use of his own family, is presumed to know its true character. The general provisions of law relating to search warrants and proceedings thereon may be applied in searching for imitation butter or cheese, and the officer serving the warrant shall deliver to the dairy commissioner for analysis a sample of the articles found.

Skimmed cheese.—Cheese manufactured from skimmed milk must be labeled as such on the top and side of cheese and package, with letters not less than 1 inch in height. Penalty, \$25 to \$100 and damages.

Penalties.—For violation of the acts relating to dairy products a fine may be imposed not exceeding \$500, or the offender may be imprisoned not over 6 months, or both penalties may be inflicted. (Rev. Stats., secs. 2515-2527, 4989-4991.)

KANSAS.

FOODS GENERALLY.

Adulteration of food and drugs.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or

if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, if containing all necessary and no unnecessary ingredient, and if distinctly labeled as such.

Manufacturers or sellers of food or drugs must furnish to any person demanding it and tendering the value a sufficient sample of any article. Penalty for violation of law, \$25 to \$100 or imprisonment 30 to 100 days, or both, together with necessary costs and expenses incurred in inspecting and analyzing the adulterated articles. (Gen. Stats., 1897, secs. 327-331, passed in 1889. Compare less detailed provisions in secs. 324-326.)

Unwholesome provisions.—Any person selling diseased or unwholesome provisions without making their character fully known to the buyer may be imprisoned not more than 6 months or fined not over \$100. (Gen. Stats., sec. 324.)

Vinegar.—It is unlawful to manufacture or sell as cider vinegar any article not the product of pure apple juice. Every person manufacturing cider vinegar shall brand each package as such with his name and place of business. The law prohibits the manufacture or sale of vinegar containing lead, sulphuric acid, or other injurious ingredient. Penalty, \$50 to \$100. (Laws of 1891, ch. 1.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell to any person or to bring to a cheese or butter factory milk adulterated with water or other substance, or from which cream has been taken or from which the stripplings have been withheld, or milk which is tainted or partly sour from want of proper care in keeping utensils after notification of such taint or carelessness. The law also prohibits the sale of milk from a diseased cow. Cheese and butter manufacturers are prohibited from taking cream from milk brought to them without the consent of the owners thereof. It is unlawful to use poisonous or injurious material in manufacturing cheese or butter. Penalty, \$25 to \$100 and double damages to the person injured. (Gen. Stats., 1897, secs. 322, 323.)

KENTUCKY.

Adulteration of food.—The adulteration or misbranding of any article of food or the sale of such adulterated or misbranded article is prohibited. The term "misbranded" is carefully defined. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted for it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter or the flesh of an animal which has died otherwise than by slaughter; if it is colored or otherwise made to appear better than it really is; if it contains an added poisonous or injurious ingredient or an antiseptic not evident to the consumer, or if it is falsely labeled as a foreign product or otherwise falsely labeled. Articles which are adulterated, but which contain no injurious ingredient, may be manufactured and sold if labeled "adulterated" or so as to show their exact character. Manufacturers of proprietary foods are not required to disclose their trade formulas, but baking powder must be labeled to show what acid salt has been used.

The director of the agricultural experiment station may approve a guaranty of purity issued by any manufacturer located in the State.

Enforcement.—The director of the experiment station is charged with the enforcement of the law. He may adopt standards where not fixed by statute. He may appoint inspectors who shall have access to places where it is suspected that adulterated articles exist, and who may take samples. State attorneys are required to prosecute at the request of the director. The experiment station may issue bulletins giving the results of analyses and similar facts. The total expense of enforcing the law is limited to \$7,500 yearly. (Laws of 1900, ch. 18.)

Vinegar.—All packages containing vinegar shall be so marked as to describe the process of manufacture and the material from which the vinegar is made, whether from fruit, malt, grain, or acid. Penalty for misbranding, \$25 to \$100. (Statutes of Kentucky, 1900, sec. 1282.)

Honey.—It is unlawful to sell any manufactured honey unless designated as such, or manufactured honey which contains any substance injurious to health. Penalty, \$10 to \$100 for first offense; \$50 to \$250 for subsequent offenses. (Ibid., sec. 1281.)

Canned goods.—Every can of fruit, vegetables, or other article of food shall be marked with the name and address of the packer or the dealer, and with an

indication of the grade or quality. "Soaked" goods shall be plainly marked as such in letters not less than 2-line pica size. Penalty, not less than \$50 for vendors; \$500 to \$1,000 for manufacturers. (*Ibid.*, sec. 1288a.)

Lard.—The law prohibits the sale of any substance in imitation of lard not produced from the fat of healthy swine, unless plainly marked to show its true character. (*Ibid.*, sec. 1288.)

Butter.—No person shall sell any compound in imitation of butter which is not made from pure milk or cream, unless each package be plainly marked to indicate its true character. (*Ibid.*, sec. 1288.)

The general pure food law declares that oleomargarine and kindred compounds may be sold only in such form as to advise the consumer of their character, free from coloration or ingredient causing them to look like butter.

LOUISIANA.

Adulteration of food.—The manufacture and sale of adulterated food or drugs is subject to a fine of not over \$50 for the first offense and not over \$100 for subsequent offenses. Drugs are deemed adulterated if they fall below the standard of the United States Pharmacopoeia or their own proposed standard. Foods are adulterated if any substance has been mixed with them so as to lower their quality or strength, or if any inferior substance has been substituted in whole or in part; or if any substance has been mixed with them which will injuriously affect the health of the consumer or of the public. All packages containing drugs or provisions must be distinctly stamped or marked with the true name and quality of the contents. The manufacture or sale of such articles without a stamp is subject to a fine of \$25 or \$50, or to imprisonment of not more than 10 days, or both; while the sale of articles falsely stamped is subject to a fine not over \$100.

The State board of health shall enforce the act, shall make all necessary investigations, and shall analyze any article which it may deem wise and publish the result of the analysis. Every manufacturer or dealer must furnish samples on application. The board shall also analyze articles on the application of any citizen on payment of certain fees. (Acts of 1882, ch. 82.)

Unwholesome food.—It is unlawful to sell tainted provisions, stale vegetables, or other articles unfit for food, or to slaughter or to sell the flesh of an animal in an unhealthy condition. It is unlawful to discharge from a train or steamboat cattle or other animals in a diseased condition within 2 miles of a city. Penalty, \$25 or 8 months imprisonment for first offense, and \$50 or not less than 6 months imprisonment, or both, for subsequent offenses. (Acts of 1880, ch. 20.)

Glucose.—The law prohibits the sale of sugar or molasses adulterated with glucose or any foreign substance, unless so distinctly branded. Penalty, imprisonment not over 6 months and fine of \$200 to \$1,000. (Acts of 1886, ch. 49.)

Cleaning of rice.—The law prohibits the use of oil, paraffin, or any similar substance in cleaning rice for market for the purpose of bettering its appearance. (Acts of 1898, ch. 184.)

Adulterated candy.—The manufacture or sale of candies adulterated with terra alba, barytes, talc, or other earthy substance, or with poisonous colorations or flavors or other injurious ingredients, is a misdemeanor. (Acts of 1898, ch. 68.)

Adulterated butter.—The sale of any substance in imitation of butter is prohibited unless it be so labeled as unmistakably to indicate its true composition. Penalty, fine or imprisonment, or both. (Acts of 1886, ch. 81.)

MAINE.

FOODS GENERALLY.

Adulteration of food.—It is unlawful to adulterate an article of food or drink in such a way as to render it injurious to health. Penalty, imprisonment not over 5 years or fine not over \$1,000. (Rev. Stats., ch. 128, sec. 1.)

Unwholesome food.—It is unlawful to sell an article of food which is diseased or otherwise unwholesome without informing the buyer. The law prohibits the killing for sale of a calf less than 4 weeks old or the sale of its flesh. (*Ibid.*)

Vinegar.—It is unlawful to manufacture or sell as cider vinegar any article not the legitimate product of pure apple juice. Penalty, \$50 to \$100.

The manufacture or sale of vinegar containing lead, sulphuric acid, or other injurious ingredient, is punishable by fine of not less than \$100. Local authorities may appoint inspectors of vinegar. (*Ibid.*, secs. 8-10.)

Sugar and molasses.—The adulteration of sugar or molasses with salts of tin, terra alba, glucose, or other enumerated substances, or the knowing sale of such

adulterated articles, is punishable by fine of not over \$1,000 or imprisonment not over 1 year. (*Ibid.*, sec. 7.)

Maple sugar.—No person shall manufacture or sell as maple sugar or syrup any article in imitation of pure maple sugar or syrup. Penalty, \$25 to \$100, or not over 30 days' imprisonment, or both. (*Laws of 1895*, ch. 118.)

Eggs.—It is unlawful to sell eggs that have been in cold storage, or limed, or that have been preserved in any manner, without notice to the purchaser. Penalty, fine not over \$100 or imprisonment not over 30 days. (*Laws of 1895*, ch. 99.)

Wheat meal.—No person shall manufacture, or sell, under the name of wheat meal, graham meal, or graham flour, any substance which is in imitation of pure wheat meal, not consisting exclusively of pure wheat meal, unless every package or wrapper bears, in letters one-half inch long, the words "compound wheat meal." Penalty, \$50. (*Laws of 1889*, ch. 257.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba or other mineral substances, or with poisonous colors or flavors, or other ingredients injurious to health, or candy containing brandy, whisky, or other alcoholic liquors in liquid form. Penalty, \$50 to \$100 and forfeiture of adulterated candy. It is the duty of prosecuting attorneys to enforce the law. (*Laws of 1895*, ch. 71.)

Lard.—The law prohibits the manufacture or sale of any compound not made from pure fat of swine under the label "pure," "refined," or "family," or unless every package is marked "compound lard" in letters half an inch long. (*Laws of 1889*, ch. 244.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk to which water or any foreign substance has been added, or of milk from diseased cows or from cows fed upon brewery or distillery waste or other deleterious substance. Milk from which cream has been taken must not be sold as pure. The milk standard is 12½ per cent of solids, including 3 per cent of fat.

Cities and towns shall annually appoint one or more milk inspectors, who shall inspect milk and take samples. Each inspector shall leave with the owner a sealed specimen of the milk of which he takes a sample.

Penalty for violation, \$20 for first offense and \$50 for subsequent offenses. (*Rev. Stats.*, ch. 88, secs. 44-47, as amended by *Laws of 1893*, ch. 255, and *Laws of 1897*, ch. 292.)

It is unlawful for any person to hold for sale the meat or milk of any animal affected with tuberculosis or any other contagious diseases. Penalty, \$5 to \$50. If local boards of health suspect the existence of such disease they shall notify the State cattle commissioner. It is the duty of the owner of a diseased animal to notify the local board of health. (*Laws of 1895*, ch. 144.)

Imitation butter and cheese.—The law forbids the manufacture or sale of any article or compound, in imitation of yellow butter or cheese, not made exclusively from milk or cream. Penalty, \$200, one-third going to the complainant. Inspectors of milk and similar officers must enforce the law. (*Rev. Stats.*, ch. 128, sec. 8, as amended by *Laws of 1895*, ch. 143.)

MARYLAND.

FOODS GENERALLY.

Unwholesome food.—No person shall sell diseased or unwholesome provisions of any kind for food. The act does not apply to green fruits or vegetables which spoil in transit. Penalty, not over \$500 or 1 year's imprisonment, or both.

Adulterated food.—No person shall mix or stain an article of food or drink with any other ingredient, or offer such an adulterated article for sale, unless its true name and the fact of such mixture be marked or stamped on each package, and unless each purchaser is notified of its character. If oleomargarine, lard, glucose, or other adulterants be mixed with any article, the package shall be marked with the name and percentage of the adulterant used. Persons purchasing such articles must be informed by the seller as to the true composition.

Glucose.—It is unlawful to mix glucose, grape sugar, or other adulterants with sugar, honey, or syrup; but such articles may be used in manufacturing candy.

Candy.—The law prohibits the manufacture or sale of candy adulterated with terra alba or other poisonous drugs or narcotics. Penalty, \$50 to \$500 for the first offense; \$500 to \$1,000 for the second offense; one-half to go to the informant. Persons injured by the sale of such candy may recover damages. Another law

makes it unlawful to adulterate candy or cakes with any injurious ingredient. Penalty, \$50 to \$500. (Laws of 1890, ch. 317; Public General Laws, art. 27, secs. 187, 188.)

Liquors and vinegar.—No person shall adulterate vinegar, wine, malt, or spirituous liquors with any injurious drug or substance, or shall sell such adulterated articles knowingly.

Penalty for violation of any of the provisions in the above paragraphs, a fine of not over \$500 or imprisonment not over 1 year.

Enforcement.—The State board of health is charged with the enforcement of the above provisions and is directed to take such steps as it deems necessary for that purpose.

Any officer designated by the board may at any reasonable time inspect articles of food exposed for sale and take samples. Whenever the board is satisfied that an article has been adulterated, it may prohibit its sale, or may destroy or otherwise dispose of it. The prosecuting attorney is bound to prosecute complaints under the law. Two thousand five hundred dollars is annually appropriated for enforcing the law.

(Laws of 1890, ch. 604; Public General Laws, art. 48, secs. 48-57.)

DAIRY PRODUCTS.

Milk.—A statute of 1900 prohibits the sale of milk which is adulterated or unwholesome, or the milk of a cow within 10 days before or 5 days after parturition, or from a sick cow, or from one fed on garbage or any substance in a state of fermentation or otherwise producing unwholesome milk, or from cows stabled near a house where there is infectious disease. The milk standard is 12.5 per cent milk solids, including 8.5 per cent butter fats. Skimmed milk may be sold only from cans so marked with letters 1 inch square. The use of chemical preservatives is specially prohibited. Penalty, not over \$100 or imprisonment not over 60 days, or both. (Laws of 1900, ch. 489.)

Imitation butter.—No person shall manufacture or sell any compound in imitation of yellow butter which is not produced wholly from pure milk or cream. Oleomargarine may be manufactured and sold in separate form, in such manner as to advise the consumer of its character, free from coloration or ingredients causing it to look like butter.

Persons selling oleomargarine must maintain a conspicuous sign to that effect. Hotel and boarding-house keepers, etc., and officers of public or private hospitals, schools, and penal institutions, using imitation butter, must maintain a sign to that effect, and must notify each guest or inmate orally. It is unlawful to sell an imitation to any person asking for butter. Various penalties are imposed for violation of this law. (Laws of 1900, ch. 496.)

Condensed milk.—No condensed milk shall be manufactured or sold unless it is made from pure and wholesome milk, from which no cream has been removed, and which conforms to the milk standard. The name of the manufacturer must be marked on each package.

Penalty, \$25 to \$100 or imprisonment 10 to 30 days for first offense, and higher penalties for subsequent offenses. (Laws of 1900, ch. 532.)

MASSACHUSETTS.

Adulteration of foods.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, and if distinctly labeled as such, with the names and percentages of the ingredients.

Penalty for violation as regards foods, \$10 to \$100 for venders and \$100 to \$500 for manufacturers. (The law relating to foods is found in Laws of 1897, ch. 344; that relating to drugs is Laws of 1896, ch. 397.)

Unwholesome food.—It is unlawful to sell diseased or unwholesome provisions without making the fact fully known to the buyer. Penalty, not over \$200 or imprisonment not over 6 months. The law also prohibits the killing or the sale of the flesh of a calf under 4 weeks old, with the same penalty. (Public Statutes, 1882, ch. 208.)

Enforcement.—The State board of health, lunacy, and charity is to enforce the pure-food law. It may exempt articles, from time to time, from the provisions of the law, and may fix the limits of variability of any article not otherwise prescribed. It may appoint inspectors and chemists. Its officers have the usual powers of taking samples. (Laws of 1882, ch. 268.)

Adulteration of liquors.—A special provision prohibits the adulteration of liquors with certain enumerated drugs or other substances injurious to health. Penalty, imprisonment not over 3 years. (Public Statutes, 1882, ch. 208, sec. 4.)

Canned goods.—All canned goods must be distinctly marked with the name and address of the packer or dealer, and with the grade or quality. "Soaked" goods must be marked as such in letter not less than 2-line pica size. Penalty same as for foods generally. (Laws of 1897, ch. 344.)

Maple syrup and molasses.—All packages or cans containing maple syrup or molasses shall be marked with the name of the person preparing it, and the name and quality of the ingredients. (Ibid.)

Lard.—The law provides that the words "pure," "refined," "family" shall not be used in connection with the label on any lard which is adulterated with foreign fat or on any lard substitute, and every such article shall bear in prescribed type the label "compound lard." Violators of the act are punishable by fine. (Laws of 1887, ch. 449.)

Impure ice.—Cities are authorized to make ordinances to prevent the sale of impure ice. (Laws of 1895, ch. 388.)

DAIRY PRODUCTS.

State dairy bureau.—The governor appoints 3 members of the State board of agriculture to constitute a State dairy bureau; also an assistant to the secretary of agriculture to assist in enforcing the law. The secretary is the executive officer. The bureau may spend not over \$4,000 yearly in enforcing the laws relating to dairy products. Its officers have the usual rights of access and inspection of dairy products. (Laws of 1891, ch. 412.)

Milk.—Cities and towns may appoint milk inspectors. They shall record the names and places of business of all persons selling or delivering milk, and issue licenses to them. Each wagon must have the number of license, name, and place of business conspicuously posted. Each seller of milk from a store or booth must also be registered.

It is unlawful to sell milk adulterated with water or any other foreign substance, or milk from cows fed on refuse of distilleries, or from diseased cows. Skimmed milk may be sold only if the words "skimmed milk" be distinctly marked in letters not less than 1 inch long on each can or vessel.

Pure milk must contain at least 9.3 per cent of milk solids exclusive of fat, and 8.7 per cent of fat, except during the months from June to August, inclusive, when the respective standards are 9 and 8 per cent. Skimmed milk must contain at least 9.3 per cent of milk solids.

Penalty for violation of law, first offense, \$50 to \$200; second offense, \$100 to \$300, or imprisonment not less than 60 days; subsequent offenses, \$50 and imprisonment 60 to 90 days.

Inspectors of milk have the right to enter any premises where milk is sold and to take samples. They must give a sealed portion of each sample taken to the person in charge. No person except an authorized inspector is entitled to demand a sample for analysis. (Public Statutes, ch. 57, as amended by Laws of 1884, ch. 810; Laws of 1885, ch. 352; Laws of 1886, ch. 318; Laws of 1894, ch. 425; Laws of 1896, ch. 398.)

Condensed milk.—No person shall sell hermetically sealed cans of condensed milk unless they be distinctly labeled with the name of the manufacturer and with the true contents of the can, whether condensed pure milk or condensed skimmed milk. Packages not hermetically sealed must be labeled with the name of the manufacturer. Penalty same as for the adulteration of milk. (Laws of 1896, ch. 264.)

Imitation butter.—The laws prohibit the manufacture or sale of any compound in imitation of yellow butter which is not produced from pure milk or cream, provided that oleomargarine may be sold in separate form, in such manner as will advise the consumer of its character, free from coloration or ingredient causing it to look like butter.

Other provisions declare that any substance in imitation of butter not made exclusively of milk or cream must be labeled "imitation butter," "oleomargarine," or "butterine" in letters not less than one-half inch long, upon the top, side, and bottom of every package. A similar label must be placed across the open surface of every package when offered for sale. Retail sales of such articles not in the original packages must be labeled in letters not less than one-half inch long. Every person selling or delivering these imitations from a vehicle must obtain a license from the local milk inspector, and must have his name and place of business, with the number of his license and the words "license to sell imitation butter," conspicuously upon each vehicle. Every person selling such articles from a booth or store must register his name in the books of the milk inspector, and must maintain a sign in letters not less than 4 inches long, to the effect that imitation butter is sold. Hotel and boarding-house keepers using imitation butter must notify each guest that the article is not genuine.

Oleomargarine shall not be furnished to any persons asking for butter.

The penalties for violation of these various provisions differ. The most common penalty is \$100 fine for first offense and \$200 for subsequent offenses.

The enforcement of the law is charged upon the local milk inspectors and upon the State dairy bureau and its agents. (Public Statutes, ch. 56, secs. 17-21, as amended and supplemented by Laws of 1884, ch. 310; Laws of 1886, ch. 317; Laws of 1891, ch. 58 and ch. 412; Laws of 1894, ch. 280, and Laws of 1896, ch. 377.)

Imitation cheese.—It is unlawful to sell any article in imitation of cheese and not made of pure milk or cream, unless it is distinctly labeled, in letters not less than 1 inch long upon the top and side of every package, "imitation cheese." Each retail purchaser must be given a label with the same words in letters not less than half an inch long. (Public Statutes, ch. 56, sec. 18.)

MICHIGAN.

FOODS GENERALLY.

Dairy and food commissioner.—The governor appoints a dairy and food commissioner who holds office for 2 years and is paid \$1,200 annually. The commissioner appoints a deputy, an analyst, and not more than six inspectors. These various officers are directed to enforce the pure-food laws, and have power to enter any place where articles of food are made or sold, and to take samples. Samples shall be taken in the presence of at least one witness, and sealed. An annual appropriation of \$18,000 is made for carrying out this law. (Laws of 1893, ch. 211, as amended by Laws of 1895, ch. 245, and Laws of 1897, ch. 154.)

Adulteration of food and drugs.—The adulteration of any article of food or the sale of such adulterated articles is prohibited. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter or is the product of a diseased animal; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health. The act does not prevent the sale of mixtures or compounds recognized as ordinary articles, provided each package bears the name and address of the manufacturer and the distinctive name of the article showing clearly that it is a compound. (Laws of 1895, ch. 193; as amended by Laws of 1897, ch. 118.)

Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice or which contains less than 2 per cent of cider vinegar solids. All vinegar shall be made exclusively from the fruit or grain from which it purports to be made, and shall contain not less than 4 per cent of absolute acetic acid. Cider vinegar shall be branded as such, with the name and residence of the manufacturer. Vinegar made by fermentation without distillation shall be branded "fermented vinegar," with the name of the substance from which it is made. Vinegar made wholly or in part from distilled liquor shall be branded "distilled vinegar," and shall be free from coloring matter. Fermented vinegar must contain not less than 1½ per cent of solids contained in the fruit or grain from which it is taken. No vinegar shall be branded a fruit vinegar unless made wholly from fruit.

No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer. Penalty, \$50 to \$100, or imprisonment not over 90 days, or both. (Laws of 1897, ch. 71.)

Liquors.—It is unlawful to manufacture or sell spirituous or malt liquors containing any injurious or abnormal ingredient. Every package containing pure

Unwholesome food.—It is unlawful to sell diseased or unwholesome provisions without making the fact fully known to the buyer. Penalty, not over \$200 or imprisonment not over 6 months. The law also prohibits the killing or the sale of the flesh of a calf under 4 weeks old, with the same penalty. (Public Statutes, 1882, ch. 208.)

Enforcement.—The State board of health, lunacy, and charity is to enforce the pure-food law. It may exempt articles, from time to time, from the provisions of the law, and may fix the limits of variability of any article not otherwise prescribed. It may appoint inspectors and chemists. Its officers have the usual powers of taking samples. (Laws of 1882, ch. 263.)

Adulteration of liquors.—A special provision prohibits the adulteration of liquors with certain enumerated drugs or other substances injurious to health. Penalty, imprisonment not over 3 years. (Public Statutes, 1882, ch. 208, sec. 4.)

Canned goods.—All canned goods must be distinctly marked with the name and address of the packer or dealer, and with the grade or quality. "Soaked" goods must be marked as such in letter not less than 2-line pica size. Penalty same as for foods generally. (Laws of 1897, ch. 344.)

Maple syrup and molasses.—All packages or cans containing maple syrup or molasses shall be marked with the name of the person preparing it, and the name and quality of the ingredients. (*Ibid.*)

Lard.—The law provides that the words "pure," "refined," "family" shall not be used in connection with the label on any lard which is adulterated with foreign fat or on any lard substitute, and every such article shall bear in prescribed type the label "compound lard." Violators of the act are punishable by fine. (Laws of 1887, ch. 449.)

Impure ice.—Cities are authorized to make ordinances to prevent the sale of impure ice. (Laws of 1895, ch. 388.)

DAIRY PRODUCTS.

State dairy bureau.—The governor appoints 3 members of the State board of agriculture to constitute a State dairy bureau; also an assistant to the secretary of agriculture to assist in enforcing the law. The secretary is the executive officer. The bureau may spend not over \$4,000 yearly in enforcing the laws relating to dairy products. Its officers have the usual rights of access and inspection of dairy products. (Laws of 1891, ch. 412.)

Milk.—Cities and towns may appoint milk inspectors. They shall record the names and places of business of all persons selling or delivering milk, and issue licenses to them. Each wagon must have the number of license, name, and place of business conspicuously posted. Each seller of milk from a store or booth must also be registered.

It is unlawful to sell milk adulterated with water or any other foreign substance, or milk from cows fed on refuse of distilleries, or from diseased cows. Skimmed milk may be sold only if the words "skimmed milk" be distinctly marked in letters not less than 1 inch long on each can or vessel.

Pure milk must contain at least 9.8 per cent of milk solids exclusive of fat, and 8.7 per cent of fat, except during the months from June to August, inclusive, when the respective standards are 9 and 8 per cent. Skimmed milk must contain at least 9.8 per cent of milk solids.

Penalty for violation of law, first offense, \$50 to \$200; second offense, \$100 to \$300, or imprisonment not less than 60 days; subsequent offenses, \$50 and imprisonment 60 to 90 days.

Inspectors of milk have the right to enter any premises where milk is sold and to take samples. They must give a sealed portion of each sample taken to the person in charge. No person except an authorized inspector is entitled to demand a sample for analysis. (Public Statutes, ch. 57, as amended by Laws of 1884, ch. 810; Laws of 1885, ch. 352; Laws of 1886, ch. 318; Laws of 1894, ch. 425; Laws of 1896, ch. 398.)

Condensed milk.—No person shall sell hermetically sealed cans of condensed milk unless they be distinctly labeled with the name of the manufacturer and with the true contents of the can, whether condensed pure milk or condensed skimmed milk. Packages not hermetically sealed must be labeled with the name of the manufacturer. Penalty same as for the adulteration of milk. (Laws of 1896, ch. 264.)

Imitation butter.—The laws prohibit the manufacture or sale of any compound in imitation of yellow butter which is not produced from pure milk or cream, provided that oleomargarine may be sold in separate form, in such manner as will advise the consumer of its character, free from coloration or ingredient causing it to look like butter.

Other provisions declare that any substance in imitation of butter not made exclusively of milk or cream must be labeled "imitation butter," "oleomargarine," or "butterine" in letters not less than one-half inch long, upon the top, side, and bottom of every package. A similar label must be placed across the open surface of every package when offered for sale. Retail sales of such articles not in the original packages must be labeled in letters not less than one-half inch long. Every person selling or delivering these imitations from a vehicle must obtain a license from the local milk inspector, and must have his name and place of business, with the number of his license and the words "license to sell imitation butter," conspicuously upon each vehicle. Every person selling such articles from a booth or store must register his name in the books of the milk inspector, and must maintain a sign in letters not less than 4 inches long, to the effect that imitation butter is sold. Hotel and boarding-house keepers using imitation butter must notify each guest that the article is not genuine.

Oleomargarine shall not be furnished to any persons asking for butter.

The penalties for violation of these various provisions differ. The most common penalty is \$100 fine for first offense and \$200 for subsequent offenses.

The enforcement of the law is charged upon the local milk inspectors and upon the State dairy bureau and its agents. (Public Statutes, ch. 56, secs. 17-21, as amended and supplemented by Laws of 1884, ch. 310; Laws of 1886, ch. 317; Laws of 1891, ch. 58 and ch. 412; Laws of 1894, ch. 280, and Laws of 1896, ch. 377.)

Imitation cheese.—It is unlawful to sell any article in imitation of cheese and not made of pure milk or cream, unless it is distinctly labeled, in letters not less than 1 inch long upon the top and side of every package, "imitation cheese." Each retail purchaser must be given a label with the same words in letters not less than half an inch long. (Public Statutes, ch. 56, sec. 18.)

MICHIGAN.

FOODS GENERALLY.

Dairy and food commissioner.—The governor appoints a dairy and food commissioner who holds office for 2 years and is paid \$1,200 annually. The commissioner appoints a deputy, an analyst, and not more than six inspectors. These various officers are directed to enforce the pure-food laws, and have power to enter any place where articles of food are made or sold, and to take samples. Samples shall be taken in the presence of at least one witness, and sealed. An annual appropriation of \$18,000 is made for carrying out this law. (Laws of 1893, ch. 211, as amended by Laws of 1895, ch. 245, and Laws of 1897, ch. 154.)

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No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer. Penalty, \$50 to \$100, or imprisonment not over 90 days, or both. (Laws of 1897, ch. 71.)

Liquors.—It is unlawful to manufacture or sell spirituous or malt liquors containing any injurious or abnormal ingredient. Every package containing pure

Unwholesome food.—It is unlawful to sell diseased or unwholesome provisions without making the fact fully known to the buyer. Penalty, not over \$200 or imprisonment not over 6 months. The law also prohibits the killing or the sale of the flesh of a calf under 4 weeks old, with the same penalty. (Public Statutes, 1882, ch. 268.)

Enforcement.—The State board of health, lunacy, and charity is to enforce the pure-food law. It may exempt articles, from time to time, from the provisions of the law, and may fix the limits of variability of any article not otherwise prescribed. It may appoint inspectors and chemists. Its officers have the usual powers of taking samples. (Laws of 1882, ch. 268.)

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It is unlawful to sell milk adulterated with water or any other foreign substance, or milk from cows fed on refuse of distilleries, or from diseased cows. Skimmed milk may be sold only if the words "skimmed milk" be distinctly marked in letters not less than 1 inch long on each can or vessel.

Pure milk must contain at least 9.3 per cent of milk solids exclusive of fat, and 8.7 per cent of fat, except during the months from June to August, inclusive, when the respective standards are 9 and 8 per cent. Skimmed milk must contain at least 9.3 per cent of milk solids.

Penalty for violation of law, first offense, \$50 to \$200; second offense, \$100 to \$300, or imprisonment not less than 60 days; subsequent offenses, \$50 and imprisonment 60 to 90 days.

Inspectors of milk have the right to enter any premises where milk is sold and to take samples. They must give a sealed portion of each sample taken to the person in charge. No person except an authorized inspector is entitled to demand a sample for analysis. (Public Statutes, ch. 57, as amended by Laws of 1884, ch. 810; Laws of 1885, ch. 352; Laws of 1886, ch. 318; Laws of 1894, ch. 425; Laws of 1896, ch. 398.)

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Other provisions declare that any substance in imitation of butter not made exclusively of milk or cream must be labeled "imitation butter," "oleomargarine," or "butterine" in letters not less than one-half inch long, upon the top, side, and bottom of every package. A similar label must be placed across the open surface of every package when offered for sale. Retail sales of such articles not in the original packages must be labeled in letters not less than one-half inch long. Every person selling or delivering these imitations from a vehicle must obtain a license from the local milk inspector, and must have his name and place of business, with the number of his license and the words "license to sell imitation butter," conspicuously upon each vehicle. Every person selling such articles from a booth or store must register his name in the books of the milk inspector, and must maintain a sign in letters not less than 4 inches long, to the effect that imitation butter is sold. Hotel and boarding-house keepers using imitation butter must notify each guest that the article is not genuine.

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Imitation cheese.—It is unlawful to sell any article in imitation of cheese and not made of pure milk or cream, unless it is distinctly labeled, in letters not less than 1 inch long upon the top and side of every package, "imitation cheese." Each retail purchaser must be given a label with the same words in letters not less than half an inch long. (Public Statutes, ch. 56, sec. 18.)

MICHIGAN.

FOODS GENERALLY.

Dairy and food commissioner.—The governor appoints a dairy and food commissioner who holds office for 2 years and is paid \$1,200 annually. The commissioner appoints a deputy, an analyst, and not more than six inspectors. These various officers are directed to enforce the pure-food laws, and have power to enter any place where articles of food are made or sold, and to take samples. Samples shall be taken in the presence of at least one witness, and sealed. An annual appropriation of \$18,000 is made for carrying out this law. (Laws of 1893, ch. 211, as amended by Laws of 1895, ch. 245, and Laws of 1897, ch. 154.)

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Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice or which contains less than 2 per cent of cider vinegar solids. All vinegar shall be made exclusively from the fruit or grain from which it purports to be made, and shall contain not less than 4 per cent of absolute acetic acid. Cider vinegar shall be branded as such, with the name and residence of the manufacturer. Vinegar made by fermentation without distillation shall be branded "fermented vinegar," with the name of the substance from which it is made. Vinegar made wholly or in part from distilled liquor shall be branded "distilled vinegar," and shall be free from coloring matter. Fermented vinegar must contain not less than 1½ per cent of solids contained in the fruit or grain from which it is taken. No vinegar shall be branded a fruit vinegar unless made wholly from fruit.

No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer. Penalty, \$50 to \$100, or imprisonment not over 90 days, or both. (Laws of 1897, ch. 71.)

Liquors.—It is unlawful to manufacture or sell spirituous or malt liquors containing any injurious or abnormal ingredient. Every package containing pure

liquors shall be branded with the name of the manufacturer and with the words "pure, without drugs or poison." Penalty, \$50 to \$500 and imprisonment 10 days to 6 months. (Laws of 1895, ch. 198, sec. 16.)

Glucose.—Every package containing molasses, syrup, or glucose shall be distinctly branded with its true name. Molasses or syrup mixed with glucose shall be branded "glucose mixture," with the proportion of glucose contained, in letters not less than one-half inch long. (Ibid., sec. 15.)

Maple sugar.—It is unlawful to manufacture and sell as maple sugar or syrup any article adulterated with common sugar, glucose, or any foreign substance without distinctly marking it with the names and percentages of the adulterants used. Penalty, \$500 to \$1,000 for manufacturers, and not less than \$50 for dealers. The State food commissioner is directed to enforce the law and has the usual powers of inspection. (Laws of 1893, p. 269.)

Adulterated candy.—The manufacture or sale of candies adulterated with terra alba, barytes, talc, or other earthy substances, or with poisonous colorations or flavors or other injurious ingredients, is punishable by a fine of \$10 to \$100, or by imprisonment 10 to 30 days, or both. The local health officers must investigate any complaint as to violation of the law. (Laws of 1887, p. 9.)

Canned goods.—It is unlawful to pack or sell canned fruits or vegetables containing injurious ingredients without marking on each can the name and address of the packer. All soaked or bleached goods must be plainly marked as such in letters not less than two-line pica size. (Laws of 1895, ch. 198, sec. 14.)

Buckwheat flour.—Michigan prohibits the sale as buckwheat flour of adulterated buckwheat flour or other substances, except when labeled "substitute," "adulterated," or "compound," in prescribed type with the name and address of the factory. Violators of the act are subject to fine or imprisonment, or both. (Laws of 1897, ch. 84.)

Coffee.—It is unlawful to manufacture or sell artificial coffee in imitation of the genuine berry; or ground coffee adulterated with chicory or other substances, unless each package is marked "coffee compound," with the name and address of the manufacturer. (Laws of 1895, ch. 193, sec. 15.)

Adulterated lard.—No person shall manufacture or sell any mixture of animal or vegetable oils, other than pure fat of swine, in imitation of lard, or any compound of lard with such other substances, unless each package shall be distinctly labeled "lard substitute" or "compound" or "adulterated lard," as the case may be, in letters not less than 1 inch long. Each package sold at retail shall be similarly labeled. (Ibid., secs. 9-12.)

Fruit jelly.—All imitations of fruit jelly or fruit butter containing glucose dextrin, or other substances, and colored in imitation of the genuine article, must be distinctly labeled "imitation fruit jelly" (or butter), with the name of the manufacturer and the place where made. Such imitations must also be composed of harmless ingredients. Penalty, \$50 to \$500 or imprisonment 90 days to 2 years, or both. (Ibid., sec. 18.)

Penalties.—Where other penalties are not provided for violation of the above provisions, the false branding of any article or the defacement or removal of a brand is subject to a fine of \$100 to \$1,000 or to imprisonment 6 months to 3 years, or both. Other violations of the law are subject to fine of \$100 to \$500 or imprisonment 30 to 90 days, or both. (Ibid., secs. 18, 19.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk which is adulterated or unwholesome, or milk from cows fed upon garbage or any substance in a state of fermentation or otherwise deleterious, or from cows kept in connection with any family in which there are contagious diseases. It is unlawful to sell milk from which cream has been removed unless each vessel containing it be conspicuously marked "skimmed milk," in letters not less than 1 inch long. Pure milk must contain not less than 12.5 per cent of milk solids, including not less than 3 per cent of fat, and must have a specific gravity between 1.029 and 1.033. Skimmed milk must have a specific gravity between 1.032 and 1.037. Penalty for violation, fine not over \$100 or imprisonment not over 3 months.

The city of Detroit shall establish, and each other city or town may establish, the office of milk inspector. Such inspectors shall visit all dairies and barns in which cattle are kept for furnishing milk, and shall otherwise enforce the law. They have the right to enter any premises and to take samples for analysis. (Laws of 1887, p. 324, as amended by Laws of 1889, p. 324.)

A later law prohibits the adulteration of milk with water, chemicals, and preservatives, or any other foreign substance. Penalty, \$1 to \$100 or imprisonment not more than 90 days, or both. (Laws of 1899, ch. 106.)

Imitation butter.—The term oleomargarine is defined in detail so as to include all imitations of butter. Every package of imitation butter must be distinctly marked in large letters with the name and address of the manufacturer and with the name of each ingredient entering into it. Retail purchasers shall be verbally informed of the character of the substitute and shall also be given a distinct label with the name of the substance and with the name and address of the manufacturer and the name of each ingredient. Every store where oleomargarine is sold and every hotel or boarding house where it is served shall maintain on the wall a placard with letters not less than 8 inches long indicating that oleomargarine is sold or used. The words "butter," "creamery," "dairy," or the name or representation of any breed of dairy cattle shall not be used in connection with butter imitations. Penalty for violation of law, \$50 to \$500 or imprisonment 6 months to 3 years, or both. (Laws of 1899, ch. 147.)

Cheese.—It is unlawful to sell as cheese any article not made exclusively of milk or cream, or into which any animal fats, melted butter, or similar articles have been introduced. Penalty, \$50 to \$500, or imprisonment 90 days to 2 years. The State dairy and food commissioner shall issue to all cheese manufacturers on application a uniform stencil bearing the words "Michigan full cream cheese," with the number of the factory. Each factory shall be registered. This stamp shall be used only upon cheese made from milk from which no cream has been taken. Every creamery or butter factory shall register yearly with the dairy and food commissioner, giving its location, etc. (Laws of 1895, ch. 198, secs. 5-7; Laws of 1897, ch. 118.)

Renovated butter.—The law provides that butter made by melting original stock and mixing it with skimmed milk or other material, or other process butter, shall be plainly labeled "process butter" on each roll or tub, or by a placard across the face of the opened package. Penalty, \$25 to \$100. The dairy and food commissioner shall enforce the law. (Laws of 1899, ch. 254.)

MINNESOTA.

FOODS GENERALLY.

Dairy and food commissioner.—The governor appoints a dairy and food commissioner, whose term of office is 2 years, and salary \$1,800. The commissioner appoints a secretary, an assistant commissioner, a chemist, and necessary inspectors, the total appropriation being limited to \$15,000. It is the duty of these officers to enforce the various pure-food laws. They have access to all places of business, and may take samples. Employees of common carriers are required to assist in tracing prohibited articles. (Laws of 1899, ch. 295.)

Adulteration of food.—It is unlawful fraudulently to adulterate food, liquor, or drugs with any substance injurious to health. Penalty, imprisonment not more than 1 year, or fine not more than \$200. (Stats., 1878, ch. 101.)

Unwholesome foods.—The sale of diseased or unwholesome food without making its character known to the buyer is punishable by imprisonment not more than 6 months or fine not over \$500. (*Ibid.*)

Adulteration of liquors.—It is unlawful to manufacture or sell liquors containing any ingredient not normal or healthful. Penalty, \$25 to \$100 for first offense, and \$50 to \$100, or imprisonment 30 to 90 days, or both, for subsequent offenses. (Laws of 1889, ch. 7.)

Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice, or which contains less than 2 per cent of cider vinegar solids. Cider vinegar shall be branded as such. All vinegar shall be made exclusively from the fruit or grain from which it purports to be made, and shall contain not less than 4½ per cent of absolute acetic acid.

No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer. Each barrel shall also be marked with its standard strength, to be denoted by the number of grains of bicarbonate of potash necessary to neutralize 1 fluid ounce of vinegar. Penalty, \$50 to \$100, or imprisonment 30 to 60 days. (Laws of 1891, ch. 119.)

Honey.—The law forbids the sale of honey compounded with or manufactured from glucose, sirup, or any substance not the product of the honey bee, unless the package is so marked, with the name of the manufacturer and the names of the adulterant materials. Honey which is produced by bees fed upon glucose sugar or sirup, or any other substance not their natural food, must be so marked. Penalty, \$15 to \$100, or imprisonment not over 30 days, or both. (Laws of 1898, chap. 21.)

Candy.—It is a misdemeanor to manufacture or sell candy adulterated with glucose, terra alba, or any other injurious substance. Penalty, \$50 to \$100. (Laws of 1895, ch. 204.)

Baking powder.—The law prohibits the manufacture and sale of baking powder containing ingredients unfit for human use or injurious to health. All packages containing baking powder must be distinctly marked with the name and place of business of the manufacturer, and with the words, "This baking powder is composed of the following ingredients and none others," together with the names of the ingredients. (Laws of 1899, ch. 245.)

Spices and condiments.—A careful definition of spices and condiments and of adulterations thereof is given. Every person manufacturing or selling such an adulterated product must conspicuously mark each can or package in a type not smaller than double pica, with the name and location of the factory and the words "mixture" or "adulterated." The State dairy and food commissioner is directed to enforce the law. Penalty, \$10 to \$50, or imprisonment not less than 30 days. (Laws of 1897, ch. 176.)

Jellies.—A careful definition of food jelly and the adulteration thereof is given. Every person manufacturing or selling such an adulterated product must conspicuously mark each can or package in a type not smaller than double pica, with the name and location of the factory and the words "mixture" or "adulterated." The State dairy and food commissioner is directed to enforce the law. Penalty, \$5 to \$50, or imprisonment not over 3 months. (Laws of 1897, ch. 167.)

Lard.—It is unlawful to manufacture or sell any compound of animal or vegetable fats in imitation of lard, or in combination with pure lard, unless each package is branded, in letters not less than 1 inch long, "lard substitute," with the approximate proportions of the constituents, and with the name of the manufacturer and his place of business. In the case of mixtures containing lard the words "adulterated lard" must be similarly used. In each retail sale of such articles the purchaser must be furnished a card with the same statement as is required on original packages. Persons selling or serving to guests articles made with substitutes for lard or adulterated lard must furnish each purchaser or guest a card with a statement to that effect. In case no bill of fare is provided hotel keepers and others must keep conspicuously posted on each side of the dining room a statement of the character required. The State board of food commissioners is to enforce the law, and may employ expert assistants, who shall have access to any place and may open packages and take samples. The act does not apply to cottolene if branded as such, with the name of the manufacturer, and if containing no substance injurious to health. Penalty for violation, \$25 to \$100, or imprisonment 30 to 90 days. (General Laws, 1891, ch. 12; Laws of 1893, ch. 126.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell unclean, impure, unwholesome, or adulterated milk or cream, or milk or cream which has not been well cooled or aerated, or to which preservatives have been added. The law also prohibits the sale of milk from cows kept in a crowded or unhealthy condition, or from cows which are sick or which are fed on distillery waste or other unwholesome substance, or from cows within 15 days before or 5 days after parturition. The milk standard is 13 per cent of milk solids, of which not less than 3.5 per cent shall be fat. Standard test instruments are prescribed.

It is unlawful to sell or advertise any article intended as an adulterant or preservative of milk, butter, or cheese, or to use such adulterants or preservatives.

Skimmed milk may be sold only from cans so marked in letters at least 1 inch high.

Every person selling or distributing milk in towns of more than 1,000 population shall annually obtain a license from the State dairy and food commissioner for each vehicle used, or for each store or booth. Licensed vehicles shall be marked with the name and place of business of the owner and the number of the license. Penalty, \$25 to \$100, or imprisonment 30 to 90 days. (Laws of 1899, ch. 295.)

Imitation butter and cheese.—It is unlawful to manufacture or sell as butter or cheese any article or compound not produced from pure milk or cream. No person shall mix animal or vegetable fats with any dairy product, or coat or color, with annatto or otherwise, any compound in such a way as to cause it to resemble butter or cheese; nor shall any person sell articles made in violation of these provisions.

Keepers of hotels, boarding houses, etc., supplying imitation butter shall print on every bill of fare a notice to that effect, or, if no bill of fare is used, shall post such notice conspicuously. (*Ibid.*)

Branding of cheese.—The State dairy and food commissioner is directed to issue to cheese manufacturers a uniform stencil with the words "Minnesota State full cream cheese," and the number of the factory. Cheese so branded shall contain not less than 45 per cent of fat to total solids. Cheese containing less fat shall be marked, in letters not less than 1 $\frac{1}{4}$ inches high, "skim cheese." Dealers selling skim cheese must post a conspicuous notice to that effect. It is unlawful to sell cheese falsely branded as to quality and place where made. (*Ibid.*)

Enforcement of law.—Detailed provisions are enacted regarding the enforcement of the law as to dairy products, the use of search warrants, the seizure of property as evidence, etc. Creameries and cheese factories are required to report the amount of their business annually to the dairy and food commissioner.

Penalties.—The penalty for the violation of any of the provisions of the laws relating to dairy products is a fine of \$25 to \$100 or imprisonment 30 to 90 days. (*Laws of 1899, ch. 295.*)

Process butter.—Butter made by melting original butter and adding to the fat skimmed milk, cream, or any other product, commonly known as "renovated butter," shall not be sold unless each package is plainly marked, in letters at least three-fourths of an inch high, on the top and side, "renovated butter." The State dairy and food commissioner is to enforce the law. (*Laws of 1899, ch. 94.*)

MISSISSIPPI.

Adulteration of food and drugs.—The adulteration of any article of food, or of any drug, or the sale of such adulterated articles, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient, or ingredient injurious to health. Any county, city, town, or village may appoint an inspector of food to enforce this and other pure-food laws. (*Code 1892, secs. 2095-2098.*)

Unwholesome food.—The law prohibits the sale of unsound or unwholesome provisions as sound and good, or the sale of the flesh of any animal dying otherwise than by slaughter or slaughtered when diseased, or the flesh of any dog, cat, or other unclean animal. (*Code 1892, sec. 2105.*)

Candy.—It is unlawful to adulterate candy with lime or other injurious substance. Penalty, not over \$500, or imprisonment not over 6 months, or both. (*Code, sec. 952.*)

Imitation butter.—It is unlawful to sell oleomargarine or other imitation without disclosing its character by a distinct mark. Penalty, \$10 to \$100, or imprisonment not over 1 month, or both. (*Code 1892, sec. 1242.*)

MISSOURI.

FOODS GENERALLY.

Adulteration of food.—The adulteration of any article of food or drink or of any drug or medicine is a misdemeanor. (*Rev. Stats., 1899, sec. 2269.*)

It is a misdemeanor to manufacture, sell, or offer to sell any article intended to be used in the preparation of food in which there is any arsenic, calomel, bismuth, ammonia, or alum. Penalty, not less than \$100. (*Laws of 1899, p. 170.*)

Unwholesome food.—It is unlawful to sell the flesh of any animal dying otherwise than by slaughter or slaughtered when diseased, or of any calf killed before the age of 6 weeks, or to sell unwholesome bread or drink without its character being made known to the purchaser. Penalty, not over \$1,000, or imprisonment not over 1 year. (*Rev. Stats., 1899, sec. 2269.*)

Adulteration of liquors.—It is unlawful to adulterate liquors with strychnin or other poisonous ingredients, or to sell such adulterated liquors. Liquor dealers and manufacturers must take oath that they will not mix or adulterate liquors. (*Rev. Stats., 1899, secs. 2278, 2289, 2290.*)

Beer.—The office of beer inspector is established by an act of 1899. The inspector must be an expert brewer. He is appointed by the governor for a term of 4 years and is paid \$3,000 per annum. He may appoint 4 deputies, who are paid \$1,500

per annum. Every brewery must be inspected by these officers and must receive a license to carry on business.

It is unlawful to manufacture beer or other malt liquors containing any substance other than pure hops, pure malt, wholesome yeast, or extract of hops, or pure barley or rice. The inspector shall label all beer inspected, certifying that it is made from wholesome ingredients. He shall keep a record of all beer and malt liquors manufactured or sold by manufacturers or dealers. He is entitled to collect for the use of the State a fee of 1 cent per gallon for all beer inspected, and 2 cents for labeling each package. All beer or malt liquors manufactured for export from the State shall be inspected in the same way, but without cost to the manufacturer.

Any person receiving beer or malt liquors for sale from outside the State shall notify the inspector and shall furnish him a sworn affidavit from the manufacturer that the beer is pure according to the standard fixed in the law. Every transportation company must furnish to the inspector, on request, a duplicate bill of lading of any beer or malt liquors received for shipment into the State.

Penalty for sale of beer without inspection or for failure to destroy certificates or labels of pu-*ity*, fine not over \$500, or imprisonment not less than 6 months and revocation of license for 2 years. Penalty for any unlawful imitation of labels, imprisonment not over 5 years. (Laws of 1899, p. 228.)

Vinegar.—It is unlawful to manufacture or sell as cider vinegar any article not made exclusively from pure apple juice. All vinegar must be free from artificial coloring or flavoring. Every cask or package of cider vinegar shall be marked as such, with the name and location of the manufacturer. No vinegar shall be branded "fruit vinegar" unless made wholly from some kind of fruit. (Rev. Stats., 1899, secs. 2282-2285.)

Candy.—It is unlawful to manufacture candy containing any cochineal, ocher, paris green, or any substitute for sugar, syrup, or cream of tartar, or any substitute for or other than pure vegetable ingredients. Penalty, \$50 to \$100, or imprisonment 3 to 6 months, or both. (Rev. Stats., 1899, secs. 2279, 2280.)

Mixed flour.—No person shall sell flour or meal or hominy made by the admixture or adulteration of grains, unless each package be branded with the names of the grains contained. Manufacturers of such products must register with the county recorder their names, places of business, and the grains they use. (Rev. Stats., 1899, secs. 8501-8506.)

DAIRY PRODUCTS.

Milk.—All cities are empowered to license and regulate dairies. (Laws of 1891, p. 63.)

Imitation butter.—Any article in the semblance of butter, and not made from pure milk or cream, is declared imitation. No person shall compound animal fat or other substance with butter, or shall compound any coloring matter with such foreign fats for the purpose of making the product resemble yellow butter. It is unlawful to sell, ship, or transport such prohibited substances unless properly marked. Every person who lawfully manufactures a substitute for butter shall mark each package, in letters not less than 1 inch long, "substitute for butter."

No action can be maintained to collect the value of goods made in violation of the law. Search warrants may be issued, and the officers serving them shall take samples. The State board of agriculture is directed to enforce the law, and \$2,500 is annually appropriated for that purpose.

Penalty for violation, \$50 to \$100, or imprisonment not over 30 days; for subsequent offenses, \$250 to \$500, or imprisonment 30 days to 6 months, or both. (Laws of 1895, p. 26.)

Cheese.—Cheese manufactured from cream or milk containing not less than 3 per cent of butter fat shall be deemed full cream cheese. Cheese made from milk from which the cream has been removed, or milk containing less than 3 per cent of butter fat, shall be marked, with letters not less than 1 inch in length, "skimmed milk cheese," or with the true name of the article. Penalty for violation, imprisonment not over 1 year, or fine \$10 to \$500, or both. No person shall ship or consign by any common carrier cheese made from milk testing at less than 3 per cent butter fat unless it is so labeled, but this does not apply to goods in transit across the State. Penalty, \$10 to \$500.

The State board of agriculture is charged with the enforcement of the act, and may bring prosecution in any court of competent jurisdiction. (Laws of 1897, p. 104.)

MONTANA.

Adulterated food.—It is a misdemeanor to adulterate or dilute food, drink, or medicine with fraudulent intent, or to sell such an adulterated or diluted article. (Penal code, sec. 682.)

Unwholesome food.—Whoever sells any article of food, drink, or medicine which is tainted or otherwise unwholesome is guilty of a misdemeanor. (Penal code, sec. 683.)

Candy.—It is a misdemeanor to manufacture or sell candy adulterated with terra alba, barytes, talc, or any mineral substance, with poisonous colors or flavors, or with other ingredients deleterious to health. (Laws of 1899, p. 189.)

Imitation butter and cheese.—It is unlawful to sell any article in imitation of butter or cheese which is not made exclusively from milk or cream, unless each package be marked, in letters not less than one-fourth of an inch square, "oleo-margarine" or "imitation cheese." Each retail purchaser must be given a similar printed label. Keepers of hotels, restaurants, etc., using these articles must post a conspicuous notice to that effect, and must inform each guest as to the character of the article, if inquiry is made. Penalty, not over \$100, or imprisonment not over 1 month. (Penal code, secs. 684-686.)

NEBRASKA.

FOODS GENERALLY.

Food commissioner.—The governor of the State is made ex officio food commissioner, and may appoint a deputy at the salary of \$1,500 yearly. It shall be the duty of these officers, with their employees, to enforce the pure-food laws, to set standards for milk and cream, and to require licensees as stated below. They have power to enter any place of manufacture of dairy products, cider, vinegar, or any imitation thereof, and may inspect any article therein and take samples. (Laws of 1899, ch. 35.)

Licensing manufacturers and dealers.—Each manufacturer and wholesale and retail dealer in butter, cheese, cider or adulterated cider, vinegar or adulterated vinegar must obtain a permit from the food commissioner annually, conditioned on the faithful observance of the laws of the State. For the permits the following fees are charged annually: Manufacture of imitation butter or cheese, \$100; wholesale dealers therein, \$50; retail dealers, \$25; owners of creameries and cheese factories and wholesale dealers in butter or cheese, \$10; manufacturers of ladle butter, \$15; manufacturers or wholesale dealers in adulterated cider or any so-called grain, wine, or fruit vinegar, \$50; manufacturers or wholesale dealers in cider vinegar, \$15. (Laws of 1899, ch. 35.)

Adulteration of food and drugs.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopœia or by such other pharmacopœia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold, if not injurious to health, if containing all necessary and no unnecessary ingredient and if distinctly labeled as such.

Any person interested may demand a sample of any article of food on offering its value. Penalty for violation, \$25 to \$100, or imprisonment not over 3 months, together with the costs of inspecting and analyzing adulterated foods. (Laws of 1897, ch. 99.)

Vinegar.—No vinegar shall be manufactured or sold as cider vinegar which is not the legitimate product of pure apple juice exclusively, or which does not contain at least 2 per cent of cider vinegar solids. Each cask or other package of cider vinegar shall be labeled as such, with the name of the manufacturer. Vinegar made from grain, wine, or fruit shall be without artificial coloring, shall be made wholly from the fruit or grain from which it purports to be made, shall contain not less than 4 per cent of acetic acid, and shall bear the name of the manufacturer and the name of the article from which it is made. No lead, sulphuric acid, or other injurious substance may be used in vinegar. Penalty as for cider. (Laws of 1897, ch. 4.)

Cider.—It is unlawful to manufacture or sell as cider any preparation containing salicylic acid, formalin, or any other drug or substance not belonging to the apple, or to manufacture or sell as cider any product which is not cider. Adulterated cider may be sold if distinctly marked as such, with the approximate proportion of each ingredient. Penalty, \$50 to \$100, or imprisonment 30 to 100 days, or both. (Laws of 1897, ch. 3.)

DAIRY PRODUCTS.

Imitation butter and cheese.—Any article in the semblance of butter or of cheese not produced wholly from pure milk or cream is declared imitation. No person shall coat or color with annatto or otherwise any substance designed as a substitute for butter or cheese, or shall compound animal or vegetable fat with butter or cheese or with coloring matter. It is unlawful to manufacture or sell a substitute for butter or cheese unless each purchaser is given a clearly printed statement that it is a substitute. Proprietors of hotels, bakeries, boarding houses, and public institutions using substitutes shall keep posted opposite each table a conspicuous notice, in prescribed form, to that effect. Imitation butter and cheese may, however, be manufactured for shipment outside the State, subject only to the restrictions of the United States law. Penalty, \$25 to \$50, or imprisonment not over 30 days; for subsequent offenses, \$50 to \$100, or imprisonment 30 days to 6 months, or both. (Laws of 1895, ch. 78.)

NEVADA.

Adulterated and unwholesome food.—It is unlawful to sell the flesh of diseased animals or other unwholesome provisions, or poisonous or adulterated food or drink. Penalty, not over \$500 or not over 6 months' imprisonment. (Gen. Stats., sec. 4677.)

Milk.—The law prohibits the sale of adulterated, impure, or unwholesome milk, or milk from cows kept in a crowded or unwholesome condition, or from cows fed on brewery or distillery waste, or other unwholesome substances. Skimmed milk may be sold as such only. Each county shall appoint a milk inspector. Penalty, not less than \$100. (Ibid., secs. 4801-4809.)

Imitation butter.—It is unlawful to manufacture or sell any compound, in imitation of butter, composed of foreign fats or into which melted butter has been introduced, unless the package containing the imitation be marked "oleomargarine" in prescribed type. Penalty, not over \$500 or imprisonment 30 days to 6 months. (Ibid., secs. 4810-4812.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. (Laws of 1897, ch. 18.)

NEW HAMPSHIRE.

FOODS GENERALLY.

Adulterated food and drugs.—No person shall manufacture or sell an adulterated food or drug. A drug is deemed adulterated if it does not conform to the standard of the United States Pharmacopeia or other standard work by which it is recognized, or if it contains less of the active principle than is contained in the genuine article or falls below its own professed standard. Food is deemed adulterated if it contains less of any valuable constituent than the genuine article; if it contains any foreign substance; if it is colored, polished, or powdered so as to conceal damage; if it contains a poisonous ingredient or a decomposed or diseased or unwholesome substance. Sellers of food or drugs must furnish to the proper officials samples of all articles. Any person who has reason to doubt the purity of an article may send a sample to the State board of health for analysis.

The State board of health shall take necessary steps for enforcement of the law. Penalty, fine not over \$400 or imprisonment not over 1 year. (Public Laws of 1891, ch. 89.)

Veal.—It is unlawful to kill any calf less than 4 weeks old for food or to sell the flesh of such a calf. Penalty, not over \$50, or imprisonment ~~not over~~ 30 days, or both. (Ibid, sec. 11.)

Adulterated liquors.—The law prohibits the adulteration of any kind of liquor with coccus indicus or other enumerated drugs, or with any injurious substance. Penalty, not over \$1,000, or imprisonment not over 1 year. (Pub. Stats., ch. 269, sec. 10.)

DAIRY PRODUCTS.

Milk.—It is unlawful to adulterate milk with water or otherwise, or to sell such adulterated milk, or milk which is unwholesome or produced by diseased cows or cows fed upon the refuse of distilleries or any other injurious substance. The law also prohibits the sale of impure milk, or milk which contains less than 13 per cent of milk solids. Skimmed milk may be sold only from cans or packages distinctly marked as such in letters not less than 1 inch long.

Towns and cities may appoint inspectors of milk. In towns having inspectors, each person selling milk must obtain a license, and shall report to the inspector the names of his employees, and shall place the number of his license on each vehicle used. Inspectors may enter places where milk is kept, examine milk, and take samples. (Pub. Stats., 1891, ch. 127.)

Imitation butter and cheese.—The law prohibits the manufacture or sale of any compound in imitation of butter not produced wholly from pure milk or cream, or of any such compound in imitation of cheese, unless each package containing such article is labeled "adulterated butter," "oleomargarine," or "imitation cheese" in letters not less than 1 inch long. Each retail purchaser must be furnished with a label of a similar character. Any article intended as a substitute for butter must be of some other color than yellow. Oleomargarine may be sold in separate and distinct form, free from coloration or from any ingredient that makes it look like butter. Keepers of hotels or boarding houses, etc., must notify their guests if imitations are used. Penalty, \$25 to \$50 for the first offense; for the second offense, \$50 to \$100 or imprisonment from 10 to 90 days, or both. (Public Laws of 1895, ch. 115.)

The State board of agriculture is directed to enforce the law. (Laws of 1899, ch. 58.)

NEW JERSEY.

FOODS GENERALLY.

State dairy commissioner.—The State board of health shall appoint a State dairy commissioner, who shall hold office for 3 years, and receive \$2,000 salary. He may appoint assistants, chemists, and inspectors. The total appropriation for this service is not over \$10,000 yearly. The proper officers may have full access to any premises where dairy products or imitations are manufactured or sold, and may open any vessel or package and take samples. By a later law this officer is also directed to enforce other pure food laws.

The law provides in detail the jurisdiction of the courts and the methods of procedure in prosecutions for violations. (Laws of 1886, p. 107; Laws of 1895, p. 806.)

Adulteration of food and drugs.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, and if distinctly labeled as such.

The State board of health shall from time to time fix the limits of variability in articles of food and drugs, and may, with the approval of the governor, declare certain articles or preparations exempt from the law. A guaranty of purity from a manufacturer within the State is a defense for the retailer.

The State board of health may appoint analysts and inspectors, and shall adopt all necessary measures to enforce the law. Every person selling articles of food or drugs must give a sample to any inspector tendering the value thereof. Inspectors shall divide each sample into two parts, seal them, and deliver one part to the seller.

The dairy commissioner also has powers as to enforcing this law.

The law prescribes in detail the jurisdiction of courts and the methods of procedure in the trial of persons charged with violating the law, together with the distribution of fines collected.

Penalty, \$50 for the first offense and \$100 for subsequent offenses. (Laws of 1881, p. 283, as amended and supplemented by Laws of 1883, p. 185; Laws of 1887, p. 150; Laws of 1897, ch. 93.)

Vinegar.—The law prohibits the manufacture or sale as cider vinegar of vinegar not exclusively the product of pure apple juice. It is unlawful to sell any kind of vinegar containing lead, sulphuric acid, or other injurious ingredients. *Penalty, \$50 to \$100.* Each county may appoint an inspector of vinegar, who has the usual right of access and of taking samples. Such inspectors are also directed, on request of any manufacturer or dealer, to inspect vinegar in his possession and give a certificate concerning its acidity. (Laws of 1888, p. 349.)

Impure ice.—The board of health in cities of the first class may prohibit the use or sale of impure ice or ice from polluted ponds or streams. (Laws of 1895, ch. 353.)

Biscuits and cakes.—It is unlawful to manufacture cakes or biscuits in which any substitute for eggs has been used unless a conspicuous label is placed on each package stating that fact. *Penalty, \$100 for first offense and \$200 for subsequent offenses.* (Laws of 1895, ch. 254.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. (Laws of 1895, ch. 180.)

DAIRY PRODUCTS.

Milk.—This State declares it unlawful to sell milk adulterated with water or any other foreign substance, or to keep cows for the production of milk in a crowded or unhealthy condition, or to feed them on distillery waste or any substance in a state of putrefaction, or on any substance which produces unwholesome milk. It is also unlawful to sell such unwholesome milk, or milk which has been exposed to contamination from persons having contagious diseases. Milk containing less than 12 per cent of milk solids is deemed adulterated or skimmed. Skimmed milk may be sold only in cans bearing metal labels, "skimmed milk," in letters not less than 2 inches high. The sale of adulterated or skimmed milk is entirely prohibited in cities of the first class. *Penalty for violation, \$50 for first offense and \$100 for subsequent offenses.*

The enforcement of the law is charged upon the State dairy commissioner. The State board of health enforces the law regarding milk exposed to contagious diseases. Local boards of health may require persons selling milk to report the name and location of all persons furnishing them milk and to adopt ordinances regarding the sale of unwholesome milk. Inspectors have the usual powers. Samples must be sealed up in the presence of one or more witnesses and sent to the State analyst for analysis. The jurisdiction of the procedure of the courts in prosecutions are described in detail. Special provision is made for jury trials in certain cases. (Laws of 1882, p. 97; Laws of 1883, p. 280; Laws of 1884, p. 127; Laws of 1887, ch. 152; Laws of 1898, ch. 183; Laws of 1898, ch. 182.)

Imitation butter and cheese.—It is unlawful to manufacture or sell any compound of fats or oils, not produced from pure milk or cream, artificially colored in imitation of butter or cheese. Oleomargarine may be sold in such manner as will advise the consumer of its real character, free from artificial coloring. Oleomargarine and similar compounds must be sold only from packages branded in 3 places "oleomargarine," "butterine," or the correct name in letters at least one-half inch high. Retail dealers must inform each purchaser that the article sold is imitation butter or cheese and must furnish a card bearing the true name with each package sold. *Penalty, not over \$200, or not over 6 months' imprisonment.* The jurisdiction of the courts and the methods of issuing process and conducting prosecutions are described in detail. (Laws of 1886, p. 107, as amended by Laws of 1887, p. 192, and Laws of 1895, p. 658.)

NEW MEXICO.

Adulteration of food.—The code of New Mexico provides that no person shall adulterate any drug with any substance injurious to health, under penalty of imprisonment not over 1 year or fine not over \$300. No person shall mix, color, or powder an article of food or drug with any ingredient injurious to health, or manufacture any article containing diseased or unwholesome animal or vegetable substances. *Penalty, \$200 for first offense; for subsequent offenses, not over \$300 or imprisonment not over 1 year, or both.*

It is also unlawful to sell any article of food or drug not of the nature or quality demanded by the purchaser. The law does not apply to articles to which a harm-

less ingredient is necessarily added in production or transportation, or to proprietary medicines, or to compound articles of food, provided that the buyer is given notice by a label that they are compounded. It is further unlawful to subtract any substance from an article of food so as to affect it injuriously. Sellers of such articles may plead in defense a written warranty on the part of the manufacturer that the article is genuine, and their own ignorance that it was otherwise.

Penalty for violation of law, \$50 for the first offense; for subsequent offenses, not over \$100 or imprisonment not over 6 months, or both. (Compiled Laws, 1897, secs. 1245-1255.)

The governor may from time to time declare certain articles or preparations exempt from the provisions of the law.

***Unwholesome food.*—It is unlawful to sell spoiled or unwholesome provisions without notice to the purchaser, under penalty of fine not over \$500 or imprisonment not over 6 months. (Compiled Laws, sec. 1244.)**

NEW YORK.

FOODS GENERALLY.

***Adulteration of food and drugs.*—The adulteration of any article of food or of any drug, or the sale of such adulterated articles, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopeia or by such other pharmacopeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, and if distinctly labeled as such.**

The State board of health from time to time fix the limits for variability of articles of food or of drugs whose standard is not prescribed in the national Pharmacopeia. With the approval of the governor, the State board may declare certain articles exempt from the provisions of the law.

***Enforcement.*—The State board of health is directed to take necessary steps to enforce the pure-food laws generally. It may appoint analysts and inspectors, who have the right of access to any premises and the right to take samples. Local boards of health may give inspectors similar powers. Upon discovering any violations of the law the State board shall notify the district attorney of the proper county, who must commence proceedings. (General Laws, ch. 25.)**

***Unwholesome food.*—It is unlawful to sell any food or drug which is tainted or spoiled, or otherwise unfit for use. (Penal Code, sec. 408.)**

***Adulterated liquors.*—The New York law brings under the definition of adulterated food spirituous or malt liquor which contains any substance not normal or healthful, or ale or beer which contains a substitute for hops or for pure extract of hops. (General Laws, ch. 25, sec. 41.)**

The State board of health shall, at least once yearly, take samples in the public market of spirituous and malt liquors manufactured in each brewery and distillery in the State. These samples shall be analyzed, and, if found adulterated, the manufacturers shall be prosecuted.

***Domestic wines.*—Wines containing alcohol not produced by natural fermentation, and all compounds of other liquors with pure wines, and all wines or imitations which contain certain enumerated drugs or other antiseptics or coloring matter, or artificial flavoring, or any injurious substance, are deemed adulterated, and their sale is prohibited. Wine which contains at least 75 per cent of pure grape juice is defined as "pure;" not more than 8 per cent of pure sugar may be added. Wine containing 50 to 75 per cent of pure grape juice shall be conspicuously stamped "half wine" in prescribed type; while wine containing less than 50 per cent of pure grape juice shall be labeled "made wine." Penalty, 50 cents for each gallon sold or manufactured. (Ibid., secs. 48-50.)**

***Vinegar.*—All vinegar which contains lead, sulphuric acid, or other injurious ingredients, or artificial coloring matter, or which has an acidity of less than 4½ per cent of acetic acid, or in the case of cider vinegar which contains less than 2 per cent of cider vinegar solids, is deemed adulterated, and its manufacture or sale is prohibited. The manufacture or sale of an imitation as cider vinegar is**

also prohibited. Each manufacturer of cider vinegar must brand each cask or package with his name and place of business and the words "cider vinegar." (General Laws, ch. 33, art. 8.)

Maple sugar and sirup.—The law prohibits the manufacture or sale of maple sugar or sirup which is not the product of pure sap. It is also unlawful to manufacture or sell as cane sugar or cane sirup any article containing maple sugar or sirup. (Laws of 1898, ch. 194.)

Adulterated candy.—The New York law includes in the list of generally prohibited adulterations, the adulteration of candy with terra alba, barytes, or other mineral substances, or with poisonous colors or flavors or other injurious ingredients. (General Laws, ch. 25, sec. 41.)

Fruit juices.—A recent law prohibits the sale of any unwholesome or poisonous acid or other substance as a substitute for pure juice of natural fruits, or the knowing use of any such article in the preparation of food or drink. Penalty, not over \$250, or imprisonment not over 6 months, or both. (Laws of 1899, ch. 343.)

Coloring matter in food products.—It is unlawful to manufacture or sell any poisonous matter intended for the coloring of food products, or to use such poisonous coloring matter. (Laws of 1899, ch. 518.)

Impure ice.—Ice which is cut from any canal must be sold only from buildings or wagons having a distinct sign to that effect. (General Laws, ch. 25, sec 41a.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk containing less than 12 per cent of milk solids or less than 3 per cent of fat, or milk drawn from cows fed on distillery waste or substances in a state of fermentation or otherwise unhealthy, or from cows kept in a crowded or unhealthy condition, or of milk or cream to which water or other foreign substance has been added. The prohibition regarding the sale of skinned milk is absolute in Greater New York, but it may be sold as such elsewhere. No persons shall keep cows for the production of milk for sale in such a way as to cause the milk to be unhealthy.

It is unlawful to furnish to a butter or cheese factory milk from which the stripings have been withheld, or sour milk.

No butter or cheese factory which receives milk without buying it shall use such milk or any of its products for its own benefit without the consent of the owners. Correct accounts of milk received and of butter and cheese produced must be kept.

If milk is sold outside the county where produced, each can or vessel must be distinctly branded with the name of the county where produced and each vehicle from which milk is sold must be similarly marked. Glass bottles in which milk is sold must have the name of the seller blown or engraved in them.

No person receiving milk for sale or manufacture shall keep it in utensils or in rooms or buildings which are unclean or unsanitary. (Laws of 1900, ch. 101.)

Penalty, same as for imitation butter and cheese. (General Laws, ch. 33, art 2; Laws of 1898, ch. 153.)

There are also special laws regarding creamery utensils, tests in creameries, and the bringing of unwholesome milk to creameries. (Laws of 1900, chs. 76, 101, 544, 559.)

Condensed milk must be made only from milk corresponding to the above requirements. Packages containing condensed milk must be labeled with the name of the manufacturer. (General Laws, ch. 33, art. 2.)

Imitation butter.—It is unlawful to manufacture or sell any article in imitation of butter, not made from unadulterated milk or cream, which shall be artificially colored in imitation of butter. The law does not prohibit the manufacture or sale of uncolored oleomargarine or similar substitutes, provided that every package shall have painted on the outside a white strip completely around it, on which shall be branded with a burning iron "oleomargarine," "imitation butter," etc., in letters at least one-half inch high. The name and address of the manufacturer shall also be placed upon each package. Each retail purchaser of imitation butter or cheese shall be given a card or notice stating its character in the prescribed form. Penalty, \$100 for the first offense and \$200 for subsequent offenses.

Imitation butter and cheese.—Another section of the law prohibits the manufacture of any article composed of animal or vegetable fats in imitation of pure butter, or the mixture of any such fats, or of acids or other injurious substances, with milk or butter so as to produce an imitation article. No person shall coat, powder, or otherwise color any such imitation compound with any substance so as to impart a yellow color resembling butter or cheese. It is similarly unlawful to manufacture any imitation of cheese, or any article to which animal fats or oils or melted butter or any substance not produced from milk or cream has been added.

The sale of articles made in violation of the law or their use by proprietors of bakeries, hotels, boarding houses, etc., is prohibited.

No imitation butter or cheese shall be purchased with money appropriated by the State or shall be used in any State institution or in any institution aided by State money.

Penalty for violation, not over \$100. Each day during which manufacture of prohibited articles is carried on, or each separate sale of such articles, or each day of prohibited use of such articles, is deemed a separate offense. (General Laws, ch. 33, art. 2.)

Branding of cheese.—Every manufacturer of cheese made from pure or full milk may brand it "full-milk cheese," and no other shall be so branded. The commissioner of agriculture shall furnish to each cheese manufacturer a uniform stencil, with the words "New York State full-cream cheese," and shall register the name and location of each such factory. Any county dairymen's association may adopt a county trade mark, to be used only upon unadulterated butter or full-milk cheese. The law does not prohibit the manufacture and sale of "skimmed cheese" as such. (Ibid, secs. 31-35.)

NORTH CAROLINA.

FOODS GENERALLY.

Adulteration of foods.—The adulteration of any article of food, or the sale of such adulterated articles, is prohibited. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter, or is the product of an animal dying otherwise than by slaughter; if it is colored, or otherwise made to appear better than it really is; if falsely labeled as a foreign or as any trade-mark product; or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, if containing all necessary and no unnecessary ingredients, and if distinctly labeled as such.

No article is deemed adulterated or misbranded if (not containing injurious ingredients) it is a mixture or compound sold under its own distinctive name, or a mixture plainly marked to indicate that it is such, or if any ingredient is necessarily added, without fraud, in connection with the production or preparation of the article, provided that it be so labeled. The introduction of any adulterated or misbranded article into the State is also prohibited, and articles transported into the State in the original packages may be seized by a process of libel.

A guarantee of purity from the wholesale jobber or manufacturer is a protection to the retail dealer.

Enforcement.—The State board of agriculture is directed to enforce the law. It may prescribe standards not otherwise fixed, and set the limits of variability of articles of food. Manufacturers and dealers must furnish duly authorized agents of the board with samples. Penalty, \$10 to \$100, or imprisonment not more than 100 days, or both. (Laws of 1899, ch. 86.)

Adulterated candy and chocolate.—The law brings under the general definition adulteration of candy or chocolate with terra alba, barytes, or other mineral substances, or with poisonous colors, flavors, or other injurious ingredients.

DAIRY PRODUCTS.

Imitation butter.—It is unlawful to manufacture or sell any article in imitation of butter unless each package shall be conspicuously labeled with the chemical ingredients and their proportions. The law is not to be construed as violating the interstate commerce law. Penalty, fine not less than \$50, or imprisonment not over 30 days; for subsequent offenses, fine not less than \$200, or imprisonment not less than six months, or both. (Laws of 1895, ch. 106.)

NORTH DAKOTA.

FOODS GENERALLY.

Adulteration of food.—The law prohibits the adulteration of any article of food or drink, or any drug, with fraudulent intent, or the knowing sale of such adulterated article. (Code of 1895, sec. 7809.)

Unwholesome food.—It is a misdemeanor to sell any article of food or medicine which is tainted, decayed, or otherwise unwholesome. (*Ibid.*, sec. 7310.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (*Laws of 1897*, ch. 8.)

DAIRY PRODUCTS.

Licensing and inspection of dairies, creameries, and cheese factories.—Every person who sells milk from a dairy of 5 or more cows, in any city or town of 1,000 inhabitants or more, must be licensed by the assistant dairy and food commissioner and pay a license fee of \$1 annually. He must have his name, place of business, and the number of his license legibly placed on each outer side of all vehicles, and he must report any changes of drivers or other employees. Penalty, \$10 to \$50.

Every person before selling milk in a store, booth, stand, or market place, must be licensed in the same manner.

The assistant dairy and food commissioner, appointed by the commissioner of agriculture, and his agents, have access to all places of business used in the manufacture and sale of dairy products or imitations thereof, and authority to open packages and take samples.

All owners or managers of creameries or cheese factories and venders of milk are required to render annual reports of the amount of business done, etc. Failure or false statement is punishable by a fine of from \$10 to \$50.

Every creamery and cheese factory must procure a stencil or brand clearly designating the quality of the product manufactured, and the number and location of the factory, which shall be used on the outside of each cheese, and also upon the packages containing either cheese or butter. Such stencils or brands shall be registered with the assistant commissioner. Penalty, \$10 to \$50. (*Laws of 1899*, ch. 72.)

Milk.—It is unlawful to sell any unclean, adulterated, or unwholesome milk, or milk taken from a diseased animal or within 15 days before or 5 days after parturition, or to stable cows kept for producing milk or cream for sale in an unhealthy or crowded place, or to feed them on any substance which produces impure or unwholesome milk. Skimmed milk, including milk from which the stripplings have been held back, must be sold as such. Milk containing less than 12 per cent of milk solids, or 3 per cent of butter fat, is regarded as skimmed milk. It is unlawful to sell as cream any article containing less than 15 per cent of butter fat. Penalty, \$20 to \$50. (*Laws of 1899*, ch. 72.)

Imitation butter.—It is unlawful to manufacture or sell imitation butter made wholly or partly out of any fat, oil, or oleaginous substance not produced from unadulterated milk or cream, unless in a separate and distinct form, free from coloration or ingredients which cause it to look like butter, and in such manner as will advise the consumer of its real character. Imitation butter exposed for sale must be distinctly and durably marked "oleomargarine," "butterine," or "imitation butter." Penalty, \$25 to \$100. (*Ibid.*)

Whoever furnishes oleomargarine or butterine in any hotel, restaurant, or boarding house, or at any lunch counter, must give notice that the substance so furnished is not butter. Penalty, \$5 to \$10. (*Ibid.*)

Renovated butter.—It is a misdemeanor to manufacture, sell, or expose for sale butter produced by melting and rechurning, or any similar process, and commonly known as boiled or process butter, unless the packages are distinctly marked "renovated butter" in letters of prescribed size. Penalty, \$25 to \$100. (*Ibid.*)

Filled and skinned milk cheese.—Cheese manufactured from skinned or partly skinned milk must be plainly branded "skinned milk cheese" in letters at least 1 inch in height and one-half inch in width. Penalty, \$20 to \$50. (*Ibid.*)

Filled cheese, or any oleaginous substance designed to take the place of cheese, must be stamped as such on the top and side of each package, in letters at least 1 inch long and one-half inch wide. Penalty, \$25 to \$100. (*Ibid.*)

OKLAHOMA.

Adulterated food.—Any person who adulterates or dilutes any article of food or drink or medicine with fraudulent intent, or who sells such adulterated articles, is guilty of a misdemeanor. (*Statutes of Oklahoma*, sec. 2264.)

Unwholesome food.—It is a misdemeanor to sell any article of food, drink, or medicine which is tainted or otherwise unwholesome. (*Ibid.*, sec. 2265.)

OHIO.

FOODS GENERALLY.

Dairy and food commissioner.—Every 2 years a dairy and food commissioner is elected by the people. His salary is \$2,000. He may appoint 2 assistants at a salary not over \$1,000 each, and necessary experts and inspectors. It is the duty of these officers to enforce the pure-food laws generally, and they have power to enter any establishment where food or drink is made or sold, to examine the books, open containers, and take samples. (83 Ohio Laws, p. 120, 1886, as amended; see Giauque's Rev. Stats., secs. 8847-8850.)

Adulteration of foods and drugs.—The adulteration of any article of food or of any drug, or the sale of such adulterated articles, is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health.

The law does not apply to harmless mixtures or compounds recognized as ordinary articles of food if each package is distinctly labeled as such, with the name and percentage of each ingredient.

Every person manufacturing or selling food or drugs must furnish to anyone interested a sample for analysis.

Penalty for violation, \$25 to \$100, or imprisonment 30 to 100 days, or both, with costs of inspection and analysis. (81 Ohio Laws, p. 67, 1884.)

Unwholesome food.—The law prohibits the sale of diseased or unwholesome provisions, unless their condition is made known to the buyer. Penalty, not over \$50 or imprisonment not over 20 days, or both. It is also forbidden to feed any animal of a kind used for human food with flesh which is in an unwholesome condition. (92 Ohio Laws, p. 97, 1896.)

Veal.—No person shall slaughter a calf for food unless it is in healthy condition and at least 4 weeks of age, nor shall any person sell the flesh of a calf not conforming to these conditions. It is unlawful to ship to or from any part of the State the carcass of a calf unless the name of the person who raised it, the name of the shipper, and the age of the calf be stated on an attached tag. (Laws of 1898, ch. 491.)

Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice, or which contains less than 2 per cent of cider vinegar solids. All vinegar shall be made exclusively from the fruit or grain from which it purports to be made, and shall contain not less than 4 per cent of acetic acid. Cider vinegar shall be branded as such. Vinegar made by fermentation without distillation shall be branded "fermented vinegar" with the name of the substance from which it is made. Vinegar made wholly or in part from distilled liquor shall be branded "distilled vinegar" and shall be free from coloring matter. Fermented vinegar must contain not less than 2 per cent of fruit or grain solids. No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer, except in the case of the farmers manufacturing not over 25 barrels yearly.

Penalty, \$50 to \$100 or imprisonment 30 to 100 days, or both. (92 O. L., p. 100, 1896.)

Domestic wine.—All liquors denominated as wine and containing alcohol not produced by natural fermentation or by authorized methods of compounding, or containing glucose, starch sugar, cider, or pomace of grapes, or wine into which carbonic-acid gas, alum, or other enumerated substances or any antiseptic, coloring matter, essence or injurious substance has been introduced, is deemed adulterated. "Pure wine" means the fermented juice of undried grapes without addition of water or any foreign substance. The fermented juice of undried grapes to which has been added pure sugar, or other things necessary for clarifying and refining it, not injurious to health, and which contains not less than 75 per cent of pure grape juice and is free from artificial flavoring, shall be known and branded as "wine." Wines otherwise pure, but containing less than 75 per cent of pure grape juice, and wines containing alcohol not produced by the natural fermentation of grapes, shall be branded "compounded."

For sale of adulterated wine as thus defined or for misbranding of other grades of wine a fine of \$100 to \$1,000 or imprisonment 30 days to 6 months, or both, may be inflicted, and in addition a penalty of 50 cents for each gallon sold or manufactured. (86 Ohio Laws, p. 96, 1889, as amended by 88 Ohio Laws, p. 231; compare Rev. Stats., sec. 7081.)

Maple sugar and sirup.—No person shall manufacture or sell as maple sugar or sirup any article which is not pure maple sugar or sirup. It is unlawful to manufacture or sell as sugar or as sirup any article made of maple sugar or sirup mixed with other ingredients. (Laws of 1898, ch. 194.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk to which any foreign substance has been added or milk from diseased cows. Skimmed milk may be sold only from cans conspicuously marked as such with letters not less than 1 inch long. Milk containing less than 12 per cent of solids or 3 per cent of fat is deemed adulterated, except during May and June, when the standard is 11½ per cent of solids. Penalty, \$50 to \$200 for first offense; for subsequent offenses higher penalties are imposed. (86 Ohio Laws, p. 229, 1889, as amended by 92 Ohio Laws, p. 149.)

Canned goods.—Every can of fruit or vegetables must be marked with the name of the packer or dealer, and with an indication of the grade or quality. All soaked goods or goods put up from products dried before canning shall be marked "soaked" in letters not less than two-line pica size. Penalty, not less than \$50 for dealers and not less than \$500 nor more than \$1,000 for manufacturers. (82 Ohio Laws, p. 163, 1885, as amended by 83 Ohio Laws, pp. 10, 73.)

Imitation butter and cheese.—No person shall manufacture or sell any article in imitation of butter or cheese not produced from pure milk or cream, nor shall any person compound with or add to milk, cream, or butter any acid or other deleterious substances or any foreign fats. Oleomargarine may be sold in a separate form in such manner as will advise the consumer of its real character, and free from coloring matter.

Imitations of butter or cheese must have marked on each package, in capital letters not less than five-line pica size, the true name of the article and the name of each ingredient. Each purchaser must be furnished a label of a similar character. The words "butter," "creamery," or "dairy" shall not be used on any package containing an imitation product.

Dealers in imitation butter or cheese must keep conspicuously posted a notice to that effect. Keepers of hotels, boarding houses, etc., who use or serve these imitations must also display a conspicuous notice of the fact.

Various penalties of fine and imprisonment are imposed for the violation of these laws. (83 Ohio Laws, p. 178, 1886; as amended by 84 Ohio Laws, p. 182; 85 Ohio Laws, p. 74; also 87 Ohio Laws, p. 51, 1890; and 91 Ohio Laws, p. 274, 1894, as amended by 92 Ohio Laws, p. 93.)

Cheese.—It is unlawful to sell any article as cheese not made exclusively of milk or cream, or containing fats or oils not produced from milk or cream, unless the words "filled cheese" are marked in letters not less than 1 inch long on each cheese. Cheese made from milk but containing less than 20 per cent of butter fat shall be similarly marked "skimmed cheese." Each retail purchaser of filled or skimmed cheese must be given a label with its proper name. In addition the exposed contents of every opened parcel of such cheese must be conspicuously marked. Dealers in filled or skimmed cheese must have a conspicuous sign, to the effect that these articles are sold, posted in each place of business or on each vehicle used for sale or delivery. Hotel and restaurant keepers serving these articles must notify their guests of their character. It is also unlawful to sell to any person asking for cheese any other than pure cheese containing more than 20 per cent of butter fat.

Every manufacturer of full milk cheese may brand it as such with the date of manufacture. The food and dairy commissioner shall issue to cheese manufacturers a uniform stencil with the words "Ohio State full cream cheese," and a number for each factory. Various penalties, fine and imprisonment, are imposed for violations of these provisions. (92 Ohio Laws, p. 51, 1896, as amended by 93 Ohio Laws, p. 89.)

OREGON.

FOODS GENERALLY.

Adulterated foods.—It is unlawful to sell or expose for sale any adulterated food, drink, medicine, or fertilizer, unless it is plainly marked to establish its true character. In any public dining or eating room where adulterated foods or drinks are

used the bill of fare must state the fact, or, if no bill of fare is used, printed notice must be conspicuously posted.

An article of food, drink, or medicine is deemed to be adulterated if any substance has been mixed with it so as to injuriously affect its quality or strength; if any inferior or cheaper substance has been substituted in it; if a valuable constituent has been abstracted from it; if it is in imitation of or sold under the name of another article; if it is colored, coated, polished, or powdered whereby it is made to appear better than it really is; if it falls below the standards prescribed by the law for dairy products and vinegar, or, in the case of jellies, jams, and fruit sauce, if it contains any other ingredients than pure food substances.

Vinegar.—Apple cider vinegar must be made of nothing else than absolute apple cider, have an acidity of not less than 4.5 per cent of absolute acetic acid, and contain 2 per cent of cider vinegar solids.

Dairy and food commissioner.—The enforcement of the pure-food laws is intrusted to the dairy and food commissioner, who has authority to appoint one deputy in each county. The commissioner and his agents have access to all places used in the manufacture, production, and sale of any foods, medicines, and fertilizers, and authority to open packages and to require samples.

Penalties.—For violating any of the provisions of the Oregon food law, including those relating to dairy products and their imitations, the legal penalty is a fine of \$25 to \$100, or imprisonment from 30 days to 6 months. (Laws of 1899, pp. 48-49.)

Candy.—It is a misdemeanor to manufacture or sell confectionery adulterated with terra alba, barytes, talc, or other mineral substance, or with poisonous colors or flavors or other injurious ingredients. Penalty, not exceeding \$100, or imprisonment not exceeding 6 months, and forfeiture of the adulterated candy. (Laws of 1899, p. 45.)

DAIRY PRODUCTS.

Dairy products.—The following standards are prescribed for dairy products: Milk must contain 3 per cent of butter fat, 9 per cent of other solids, and not more than 88 per cent of water, and have a specific gravity of 1.038 after the cream has been removed. Cream must contain 20 per cent of butter fat. Condensed milk must be made only from pure milk. Cheese must have 40 per cent of butter fat. Butter must not have more than 14 per cent of water.

Milk drawn from cows within 15 days before or 5 days after parturition, or from cows fed on unwholesome food, is deemed impure and unwholesome. Cows kept in stables for dairy purposes must be allowed at least 800 cubic feet of air space each, and must not be confined closer together than 6 feet, if facing each other, unless there is an air-tight partition between them. The stables must be well ventilated and kept in good condition. If any dairy is found in a filthy or unhealthy condition the proprietor may be required to put it in good condition, and in case of his failure to do so within 8 days, the dairy and food commissioner may have the work done at the proprietor's expense.

It is unlawful to use the boxes or brands of any creamery or dairyman for the purpose of selling the butter of any other creamery or dairyman. (Laws of 1899, pp. 47, 49.)

Imitation butter and cheese.—Every person who sells oleomargarine or other imitation dairy product is required to keep a sale book in which shall be shown the amounts sold and the names and addresses of the purchasers, and which shall be open to the inspection of the State dairy officials at all times. Every manufacturer of butter or cheese for sale in quantities exceeding 25 pounds a week, must report annually to the dairy and food commissioner the number of pounds of milk used in the manufacture of each, and the number of pounds of butter and cheese made and sold; but the amounts made shall not be published if the maker requests otherwise. (Ibid., pp. 49, 50.)

Process and tub butter.—It is unlawful to expose for sale reworked or mixed butter, unless it is plainly marked "process butter," or to expose for sale tub or packed butter remolded in prints, rolls, or squares, unless it is plainly marked "tub butter." It is unlawful to mark reworked, mixed, packed, or remolded butter with the stamp of any creamery, or with the words "creamery butter." (Ibid., p. 46.)

PENNSYLVANIA.

FOODS GENERALLY.

Dairy and food commissioner.—The State board of agriculture is to appoint biennially a dairy and food commissioner, whose salary shall be \$2,000. With the approval of the board, he may appoint assistants, agents, chemists, and experts. These officers are to enforce all the laws relating to foods. They have the right

to enter premises where articles of food or drugs are manufactured or sold, and to open packages and take samples. (Laws of 1893, ch. 96; Laws of 1895, ch. 457.)

Adulteration of food.—The adulteration of any article of food or the sale of such adulterated articles is prohibited. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, and if distinctly labeled as such.

Every person manufacturing or selling any article of food shall furnish any one interested and tendering payment a sample for analysis. Penalty for violation, \$50 to \$100, or imprisonment not over 30 to 90 days, or both, with costs of inspection and analysis. (Laws of 1895, ch. 238.)

Adulterated drugs.—Pennsylvania has a separate and detailed law prohibiting the adulteration of drugs. A drug is deemed adulterated if any substance has been mixed with it so as to lower its character; if any substance has been abstracted from it; if any inferior substance has been substituted in it; if it is an imitation; if it fails to correspond to the recognized standard of the United States Pharmacopoeia or certain other enumerated standard works.

The State pharmaceutical examining board is empowered to employ a chemist to examine samples and to enforce the law. (Laws of 1897, p. 85.)

Unwholesome foods.—It is a misdemeanor to sell tainted or unwholesome food or the flesh of any calf killed under the age of 3 weeks. (Pepper and Lewis's Digest, 1894, p. 2876.)

Vinegar.—It is unlawful to sell as cider vinegar any vinegar which is not made exclusively from pure apple juice, or which contains less than 1.5 per cent of cider vinegar solids. All vinegar shall be made wholly from the fruit or grain from which it is represented to be made, and shall contain not less than 4 per cent of absolute acetic acid. Vinegar made by fermentation shall be branded as such; vinegar made by distillation shall be branded "distilled vinegar" and shall be free from added coloring matter. Fermented vinegar shall contain 1.5 per cent of solids. All vinegar shall be free from poisonous or injurious ingredients, and each package shall be distinctly marked with the name and residence of the manufacturer. The dairy and food commissioner is to enforce the law.

Penalty for first offense, \$50 to \$100, or imprisonment 10 to 30 days, or both; subsequent offenses, \$100 and imprisonment 30 days. (Laws of 1897, ch. 140.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. No action shall be maintained for the value of any candy or confectionery adulterated in violation of law. (Laws, of 1887, p. 157.)

Lard.—The law prohibits the manufacture or sale of any article in imitation of lard, not produced from pure fat of swine, under the label "pure," "refined," or "family," or unless each package is labeled "compound lard" in letters not less than one-half inch long. Penalty, \$50 for first offense; \$100 for subsequent offenses. (Laws of 1891, ch. 186.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of impure, adulterated, or unwholesome milk, or the adulteration of milk. Milk produced from cows fed on distillery waste or on any substance in a state of putrefaction is deemed unwholesome. No person shall deal in milk in any town or city of more than 1,000 inhabitants without having each vehicle conspicuously marked with his name and the place whence the milk is obtained. Penalty for violation, not more than \$20. (Laws of 1878, ch. 188.)

It is also unlawful to sell milk or cream to which has been added boracic acid or salicylic acid, or any other injurious substance for the purpose of artificially coloring it. Penalty, \$50 to \$100, or imprisonment not over 60 days, or both. (Laws of 1897, p. 142.)

A special law prohibits the furnishing to any creamery or cheese factory of adulterated, impure, or skimmed milk, or milk that is tainted or partially sour. (Laws of 1881, ch. 116.)

Imitation butter.—The manufacture or sale of any product, in imitation of yellow butter, containing fat, oil, or oleaginous substance not produced from milk or cream, is prohibited. The manufacture or sale of oleomargarine or butterine free from coloration, and in such manner as will advise the consumer of its real

character is permitted if it be marked "oleomargarine" or "butterine" on the outside of each tub or package in a conspicuous place. Every retail package must have a wrapper plainly stamped.

Every manufacturer or dealer in imitation butter must obtain a license from the dairy and food commissioner. The annual license fees are: Manufacturer, \$1,000; wholesaler, \$500; retailer, \$100; restaurant or hotel, \$50; boarding house, \$10. Every manufacturer is also to procure from the dairy and food commissioner a sign or signs clearly setting forth that he manufactures or sells oleomargarine or butterine, which shall be hung in a conspicuous place.

Penalty., \$100 and costs, including expenses of inspection and analysis, recoverable by civil action. Violation of the act is also a misdemeanor, the penalty being a fine of \$100 to \$500 for the first offense, and fine or imprisonment, or both, for any subsequent offense. (Laws of 1899, No. 136.)

Process butter.—Butter produced by melting and by emulsion or other process, commonly known as "boiled" or "process" butter, must be plainly labeled "renovated butter" in conspicuous letters on wrappers of prints or rolls, on the top and two sides of receptacles, or on a placard attached to the mass in case of uncovered butter. The dairy and food commissioner is charged with the enforcement of the law.

Penalty., \$25 to \$100 and costs, including expense of inspection and analysis, recoverable by an action. Violation of the act is also a misdemeanor, for which the penalty is not more than \$100, or imprisonment for not more than 30 days, or both, for the first offense, and \$100 fine and imprisonment for 30 days for every subsequent offense. (Laws of 1899, No. 121.)

Cheese.—It is unlawful to manufacture or sell cheese not the legitimate product of pure milk or cream, or into which foreign fats or substances have been introduced. Cheese containing not less than 32 per cent of butter fat shall be branded "full cream;" cheese containing 24 per cent, "three-fourths cream;" 16 per cent, "half cream;" 8 per cent, "one-fourth cream;" less than 8 per cent, "skimmed cheese." The dairy and food commissioner is to enforce the law. (Laws of 1897, ch. 164.)

Dairy products in State institutions.—It is unlawful to use imitation butter or cheese in any charitable or penal institution. (Laws of 1898, ch. 112.)

RHODE ISLAND.

FOODS GENERALLY.

Adulterated food.—Any person who shall adulterate an article of food or drink, or shall sell such adulterated article, shall be imprisoned not exceeding 6 months or fined not exceeding \$200. (General Laws, 1896, ch. 282.)

Unwholesome food.—The sale of diseased or unwholesome provisions without making their character known to the buyer is punishable by imprisonment not over 6 months or fine not over \$200. (Ibid.)

The law prohibits the killing for sale or the sale of the flesh of any calf less than 4 weeks old. Penalty, not over \$20. (Ibid.)

Adulteration of liquors.—It is unlawful to sell adulterated spirituous or intoxicating liquors, or liquors of a quality inferior to what they are represented to be. A special provision with higher penalty prohibits the sale of liquors adulterated with injurious ingredients. Adulterated liquors shall be forfeited to the State. The governor shall annually appoint a State assayer of liquors to analyze liquors on the application of the prosecuting officers. (General Laws, ch. 151.)

Vinegar.—It is unlawful to sell as cider vinegar any article not made exclusively from apple cider, or cider vinegar containing less than 2 per cent of cider-vinegar solids. All vinegar shall have an acidity equal to 4.5 per cent of acetic acid, and shall be free from artificial coloring matter. Inspectors of milk and other local officers are given power to enforce the law. A fee of 25 cents shall be paid by the owner for each barrel of vinegar inspected. Penalty, not over \$100. (General Laws, 1896, ch. 148.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. (Laws of 1896, ch. 350.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk adulterated with any foreign substance, or of milk produced from cows fed upon distillery waste or other unwholesome substances, or from diseased cows. Skimmed milk may be sold only from cans distinctly marked as such in letters not less than 1 inch high. The milk standard

is 12 per cent of milk solids and $\frac{3}{4}$ per cent of butter fat. Penalty for violation, \$20 for the first offense, and \$30 and imprisonment for 10 days for subsequent offenses.

Local authorities are empowered to appoint milk inspectors. Every inspector shall record the name and place of office of each person engaged in the sale of milk, and he has power to enter any place where milk is kept or sold and take samples. In doing so he shall deliver one sealed sample to the owner. Milk dealers must have their names and places of business conspicuously placed upon all vehicles used for delivering milk. (General Laws, ch. 147, secs. 3-8.)

Imitation butter.—It is unlawful to manufacture or sell any article in imitation of butter not made exclusively from milk or cream, or any article into which melted butter has been introduced, unless each package be distinctly stamped with the word "oleomargarine" in letters at least one-half inch long, and unless each retail sale be accompanied by a similar label. Penalty, not over \$100, one-half to go to complainant. (General Laws, 1896, ch. 146, sec. 4.)

SOUTH CAROLINA.

FOODS GENERALLY.

Adulteration of foods.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia or of such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, and if distinctly labeled as such, with the names of the ingredients.

The State board of health may from time to time declare certain articles exempt from the provisions of the law. It may also prescribe the limits of variability permissible in any article.

Enforcement.—The State board of health shall enforce the law and may appoint inspectors, analysts, and chemists for that purpose. The board shall take necessary measures to facilitate carrying out the law. Every manufacturer or dealer in food shall furnish to any officer of the board tendering its value a sample of any article for analysis. Penalty, for violation, not over \$50, or imprisonment not over 15 days, for the first offense, with higher penalties for subsequent offenses. (Acts of 1898, ch. 504.)

Adulterated liquors.—The general pure food law includes, as a special definition under adulteration, spirituous or fermented liquors containing any ingredient not normal or healthful, or liquors not conforming to the standard required by the laws of the State. (*Ibid.*)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (Acts of 1896, ch. 95.)

DAIRY PRODUCTS.

Milk.—It is unlawful to sell impure, unwholesome, adulterated, or skimmed milk, or milk from which the stripplings have been withheld, or milk from diseased cows. The milk standard is 8 per cent of butter fat and $\frac{3}{4}$ per cent of other solids. Penalty, \$10 to \$100, one-half to go to the informer. (Acts of 1896, ch. 96.)

Imitation butter and cheese.—It is unlawful to sell any imitation of butter or cheese as genuine. No person shall coat or color with annatto, or otherwise, any substance designed to be used as a substitute for butter or cheese, or shall mix foreign fats with butter or cheese, or otherwise cause it to resemble yellow butter or cheese. No person shall sell imitation butter or cheese made in violation of the law. Persons lawfully manufacturing these imitations must mark each package on the top and side "substitute for butter" or "substitute for cheese," in letters not less than 1 inch long, and no person shall have in possession except for family use any substitute not so marked. Hotel and restaurant keepers using these substitutes must keep a notice conspicuously posted to that effect. Penalty for violation, \$10 to \$100, one-half to go to the informer. (Acts of 1896, ch. 96.)

SOUTH DAKOTA.

FOODS GENERALLY.

Adulteration of food.—An article is deemed adulterated if it is mixed with any substance so that its quality is injured, if any inferior substance is substituted in it, if any valuable ingredient has been abstracted, if it is an imitation, if it has been treated so as to conceal inferiority, or if any substance has been added which renders it injurious to health. It is unlawful to sell such adulterated articles unless clearly labeled "Adulterated," with the name and place of business of the manufacturer. Penalty, \$25 to \$50 or imprisonment 30 to 90 days. (Laws of 1899, ch. 89.)

Another law which is not expressly repealed has somewhat different definitions of adulterations, but likewise requires notice of the fact of adulteration, together with the names of the ingredients, to be furnished to the purchaser. (Laws of 1897, ch. 65.)

Unwholesome food.—No person shall sell diseased, corrupted, or unwholesome food without making its character known to the buyer. Penalty, \$100 to \$200 or imprisonment 3 to 6 months. (Laws of 1897, ch. 65.)

Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice or which contains less than 2 per cent of cider vinegar solids. All vinegar shall contain not less than 4½ per cent of absolute acetic acid. Cider vinegar shall be branded as such with the name and residence of the manufacturer.

No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the name and residence of the manufacturer and its strength as measured by the number of grains of bicarbonate of potash required to neutralize one fluid ounce. Penalty, \$50 to \$100 or imprisonment 30 to 100 days, or both. Laws of 1899, ch. 89.

Honey.—It is unlawful to sell honey compounded from or mixed with glucose, sirup, or other substances not the legitimate product of the honey bee unless each package be marked with the name of the manufacturer and of the substances from which it is manufactured. Honey made by bees fed upon glucose, sugar, or other similar substances must be marked with the substances from which the honey is stored. (*Ibid.*)

Lard.—It is unlawful to manufacture or sell any imitation of lard or similar compound not produced wholly from the fat of swine unless each package shall be distinctly labeled in letters not less than 1 inch long with the name and location of the manufacturer and the words "Lard substitute," together with the names and approximate proportions of the constituents. Lard which is adulterated with other animal or vegetable fats shall be similarly labeled "Adulterated lard." Retail dealers must place a similar label upon each package sold. Proprietors of hotels and restaurants, and manufacturers of articles of food using substitutes for or adulterations of lard must furnish to each purchaser or guest a card or must maintain a conspicuous notice to that effect. The act does not apply to cottolene if labeled as such and containing no substances injurious to health. (*Ibid.*)

Spices and condiments.—No person shall manufacture or sell spices or condiments adulterated with any foreign substances unless each package be marked with the name and location of the manufacturer and the words "Mixture" and "Adulterated." (*Ibid.*)

Adulteration of food jellies.—It is unlawful to manufacture or sell food jellies adulterated with any foreign substances unless each can or other package shall be distinctly labeled in double-pica type with the name of the manufacturer, his place of business, and the words "Mixture" and "Adulterated." (*Ibid.*)

Baking powder.—The law prohibits the manufacture or sale of baking powder containing alum unless each package is distinctly labeled with the words, "This baking powder contains alum." (*Ibid.*)

DAIRY PRODUCTS.

Imitation butter.—It is unlawful to manufacture or sell any compound of fats and oils in imitation of butter and not made from pure milk or cream. Oleomargarine may be sold in a separate and distinct form and must be colored pink. Hotel and restaurant keepers furnishing imitations to their guests must notify each guest that the substance is not genuine. Penalty, \$100 to \$200 or imprisonment 3 to 6 months; for hotel keepers, etc., \$10 to \$50. (Laws of 1897, ch. 65.)

TENNESSEE.

FOODS GENERALLY.

Adulterated food.—It is unlawful to manufacture or sell adulterated or misbranded food under penalty of fine of \$25 to \$100 for the first offense and not less than \$200 or imprisonment not over 1 year or both for subsequent offenses. The term misbranded is defined in the law. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health. The law does not apply to articles not containing poisonous ingredients, if they are mixtures or compounds known as ordinary articles of food; or if they are properly labeled to indicate that they are mixtures or compounds; or if any substance is unavoidably or necessarily mixed with them in preparation, provided they are so marked.

Enforcement.—The State board of health is directed to establish a chemical and biological laboratory and to employ expert assistants. The board of health shall enforce the law, and shall report any adulteration which it discovers to the proper county attorney, who must bring proceedings at once. It shall also publish the results of analyses. Every person manufacturing or selling food must furnish samples on demand to any authorized representative of the board. Samples shall be divided into 3 parts, each of which shall be sealed, one given to the dealer, one to the district attorney, and one to the board of health. (Laws of 1897, ch. 45.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. The offender is guilty of a misdemeanor, and shall be fined not more than \$500. The adulterated article shall be confiscated by the State and destroyed under the direction of the court. (Laws of 1887, ch. 33.)

Imitation butter.—The law prohibits the sale of any compound, in imitation of butter, not produced exclusively from pure milk or cream, unless each package shall be labeled "Imitation butter," "Oleomargarine," or "Butterine" in letters not less than one-half inch long upon the top, side, and bottom. Each retail sale shall be accompanied by a label or wrapper similarly marked. It is unlawful to manufacture or sell any imitation of yellow butter; but oleomargarine and similar substances may be sold in distinct form, free from coloration or ingredient that causes them to look like butter. Penalty, \$50 for first offense; \$100 for subsequent offenses. (Laws of 1895, ch. 101.)

TEXAS.

Mixed flour, etc.—Every manufacturer or dealer in manufactured wheat or corn products, or any flour, meal, or feed made from wheat or corn, in original packages, is required to have the packages marked with the name and actual net weight of the contents in legible letters and figures not less than 2 inches in size; and all adulterated wheat or corn products must have the word "Adulterated" stamped upon the sacks or barrels. Penalty, \$25 to \$1,000. (Laws of 1899, ch. 167.)

UTAH.

FOODS GENERALLY.

State dairy and food commissioner.—The governor is to appoint biennially a dairy and food commissioner, whose salary shall be \$600, and whose duty it shall be to enforce the pure food laws. He has power to enter any place where foods are manufactured or sold, to open any package, and to take samples. Detailed provisions regarding search warrants and prosecutions under the dairy laws are also enacted. (Rev. Stats., 1898, secs. 744-746, 2446-2450.)

Adulterated food.—It is a misdemeanor to adulterate or dilute any article of food, drink, or medicine with fraudulent intent, or to sell such adulterated article as pure. (Ibid., sec. 4288.)

Unwholesome food.—It is a misdemeanor to sell any article of food or medicine which is tainted or otherwise unwholesome. (Ibid., sec. 4290.)

Vinegar.—It is unlawful to manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredient, or cider vinegar which is not the legit-

imate product of pure apple juice. All vinegar except cider vinegar shall have an acidity equal to 4.5 per cent of acetic acid, and cider vinegar shall contain not less than 2 per cent of cider vinegar solids. Every barrel of vinegar must be conspicuously marked with the name and the place of business of the manufacturer, the kind of vinegar, and the percentage of acetic acid. Violation of the law is a misdemeanor. (*Ibid.*, secs. 4283-4287, as amended by the Laws of 1899, ch. 68.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other substances, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$500. (*Ibid.*, sec. 4289.)

DAIRY PRODUCTS.

Chemicals in dairy products.—The law prohibits introduction into milk, cream, butter, or cheese of boracic acid, salicylic acid, or other chemicals injurious to health. Penalty, \$10 to \$100. (*Ibid.*, sec. 733.)

Milk.—It is unlawful to sell as pure any milk which is adulterated or from which any part of the cream has been taken, or milk which is unwholesome or taken from any cow having disease. Penalty, \$10 to \$100. (Rev. Stats., 1898, secs. 729, 730-732.)

No person shall feed dairy cattle with swill, brewers' malt, distillery waste, or other substance tending to produce unwholesome milk. (Laws of 1899, ch. 53.)

Imitation butter.—The law prohibits the manufacture or sale of any article in imitation of yellow butter not produced from pure milk or cream. Oleomargarine may be sold in distinct form in such manner as to advise the consumer of its character, free from coloration or ingredient that makes it look like butter and from any word or brand tending to deceive the consumer. Penalty for first offense, not less than \$25; for subsequent offenses, not less than \$50, or imprisonment not less than 10 days, or both.

Oleomargarine and butterine shall be conspicuously marked, in letters not less than 1 inch long, with their true name, both upon the package and upon the exposed contents during sale. Dealers in imitation products shall maintain a conspicuous sign to that effect upon their places of business and upon their delivery wagons. Keepers of hotels, etc., furnishing imitation butter to their patrons shall give each guest notice. Penalty, \$25 to \$50, or imprisonment not less than 10 days, or both. (Rev. Stats., 1898, secs. 736-742.)

Filled and skinned cheese.—No person shall manufacture or sell cheese which is made from skinned milk to which any foreign fat has been added. (*Ibid.*, sec. 734.)

No person shall manufacture or sell cheese made from milk from which any of the fats have been removed, unless each cheese shall be not less than 9 nor more than 11 inches in diameter, and not less than 9 inches high. (*Ibid.*, sec. 735.)

Dairy products in State institutions.—No imitation butter or cheese shall be used in any State, charitable, or penal institution. (*Ibid.*)

VERMONT.

FOODS GENERALLY.

Adulteration of food.—It is unlawful to adulterate any article of food or drink or any drug with a substance injurious to health or to sell such adulterated articles. Penalty, not over \$300 or not more than 2 years' imprisonment. (Statutes, 1894, secs. 5075, 5076.)

Unwholesome food.—The law prohibits the sale of diseased, corrupt, or unwholesome provisions, or of the flesh of any calf killed before the age of 4 weeks. Penalty, not over \$300 or not more than 6 months' imprisonment. (Statutes, 1894, sec. 5078.)

Maple sugar and honey.—It is unlawful to manufacture or sell maple sugar or syrup, or honey, adulterated with cane sugar, glucose, or otherwise. Penalty, \$50 to \$200. (*Ibid.*, sec. 4344.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substances, or with colors or flavors of other ingredients injurious to health. Penalty, \$50 to \$100. (*Ibid.*, sec. 4345.)

Flour and meal.—The law prohibits the manufacture or sale of meal or ground grain adulterated with any substance whatever unless the true ingredients be plainly marked upon each package. Penalty, \$25 to \$100. (*Ibid.*, sec. 4343.)

Adulterated lard.—It is unlawful to manufacture or sell any substance resembling lard not the pure product of the fat of swine in any package bearing the words "pure," "refined," or "family;" or unless the package be marked in letters not less than one-fourth inch long with the words "compound lard." Penalty, not over \$50. (*Ibid.*, secs., 4341, 4342.)

DAIRY PRODUCTS.

Milk.—The law prohibits the sale of milk diluted or adulterated, or from which cream has been taken, or from which the stripplings have been withheld. The milk standard is 12½ per cent of solids, including 8½ per cent of butter fat, except during May and June, when the solids shall be 12 per cent. The basis for payment in creameries and cheese factories is 4 per cent of butter fat. Samples of milk may be taken by any person in the presence of at least one witness, and of the person selling it, and sent to the State experiment station for analysis. Penalty, \$50 to \$300. (Statutes, 1894, secs. 4327-4338.)

Imitation butter and cheese.—No person shall manufacture or sell any combination of fats not produced exclusively from milk or cream, in imitation of butter or cheese, or shall mix with milk, cream, or butter any acid or other deleterious substance or animal or vegetable oils. Imitation butter may be sold, or served by hotel and boarding-house keepers, only if it is colored pink. Penalty, \$100 to \$300 or imprisonment 6 months for the first offense, with higher penalties for subsequent offenses. Justices of the peace may issue search warrants on the oath of any person that he has reason to suspect the sale of such adulterated articles. (*Ibid.*, secs. 4334-4340.)

VIRGINIA.

FOODS GENERALLY.-

Adulteration of food.—The adulteration of food, drink, or medicine with injurious substances, or with those intended fraudulently to increase its weight, is punishable by fine not over \$500 and imprisonment not over 1 year. (Code, 1887, sec. 3812.)

Unwholesome food.—The sale of diseased or unwholesome provisions, unless the buyer is informed of their character, is subject to imprisonment not over 6 months and fine not over \$100. (Code, sec. 3811.)

Vinegar.—It is a misdemeanor to manufacture or sell any vinegar having an acetic acidity less than 4½ per cent or which contains preparation of lead, sulphuric acid, or any other injurious substances. Cider vinegar must be made exclusively of pure apple juice, and must contain 2 per cent of cider vinegar solids. Manufacturers of cider vinegar shall brand each package with their name and place of business and with the words "cider vinegar." Penalty, \$50 to \$200. (Laws of 1889-90, p. 34.)

Cider.—Cider which is made exclusively of pure apple juice, with such ingredients as are necessary to preserve it, shall be conspicuously branded "pure apple cider." Cider containing other ingredients must be similarly branded "chemical cider." Penalty, \$20 to \$50. (Laws of 1893-94, p. 885.)

Flour.—No person shall adulterate wheat flour with corn starch, corn flour, barley flour, or other substances, or shall take orders for such adulterated flour or sell it, unless each package is plainly marked "combination" with the name and percentage of each ingredient. Penalty, \$25 to \$100, or imprisonment not less than 60 days, or both. (Laws of 1897-98, p. 493.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. Penalty, \$20 to \$200. (Laws of 1897-98, p. 50.)

Imitation butter and cheese.—The law declares it illegal to manufacture or sell any compound of fats not produced exclusively from pure milk or cream, in imitation of butter or cheese. A specific provision prohibits the coloring of any such compound with annatto or other coloring matter. The law is not designed to prohibit the sale of oleomargarine or butterine or kindred compounds in a distinct form and in such manner as to advise the consumer of their real character. The law also prohibits the mixing with milk, cream, or butter of any injurious acid or other substances, or of animal fat or vegetable oil in such a way as to imitate butter or cheese. Proprietors of bakeries, hotels, boarding houses, etc., using imitation butter in any way must post a conspicuous notice to that effect. Penalty, \$50 to \$250, or imprisonment not over 6 months. (Laws of 1891-92, p. 840; as amended by Laws of 1897-98, ch. 146.)

WASHINGTON.

FOODS GENERALLY.

Dairy and food commissioner.—The governor is to appoint a dairy and food commissioner, whose term of office is 4 years and salary \$1,500. The commissioner may appoint one or more deputies. It is the duty of these officers to inspect

articles of food and drink and to enforce the laws regarding them. They may enter any place where such articles are believed to be kept, open packages, and take samples for analysis. It is the duty of the chemist of any State institution to analyze any substance submitted to him by the dairy and food commissioner. The attorney-general or the prosecuting attorney of any county must render legal assistance when called upon.

Officers of common carriers are required to render any assistance in their power in tracing the presence of articles in violation of the dairy law.

Proprietors of creameries, cheese factories, and dairies are required to make statistical reports. (The laws relating to dairy products are combined into one act, session laws of 1899, chapter 48; the general pure-food law, chapter 118 of the laws of 1899, makes the dairy commissioner also food commissioner.)

Adulteration of foods.—The adulteration of any article of food or the sale of such adulterated article is prohibited. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is, or if it contains any added poisonous ingredient or ingredient injurious to health. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health and if distinctly labeled as such, with the names and percentages of the ingredients.

Every person manufacturing or selling any article of food shall furnish to any one interested, on tender of payment, a sufficient sample for analysis. Penalty for violation, \$50 to \$100, or imprisonment 80 to 90 days, or both, together with costs of inspection and analysis. (Laws of 1899, chap. 118.)

DAIRY PRODUCTS.

Milk.—The law declares it unlawful to sell as pure and wholesome milk which is adulterated with water or otherwise, or which is impure or unwholesome, or which has been exposed to dangerous exhalations or discharges from persons or animals, or milk from sick cows or cows kept in a crowded and unhealthy condition, or fed upon distillery waste or other unhealthy substances, or from cows within 15 days before or 4 days after parturition. Milk from which cream has been removed may be sold only from cans or packages marked "skimmed milk" in letters at least 1 inch long. The milk standard is 8 per cent of butter fat and 8 per cent of other milk solids. Cream taken from impure milk or which contains less than 18 per cent of butter fat must not be sold.

Every person who delivers milk from vehicles must obtain a license annually from the State dairy commissioner, for which he shall pay \$1 for each vehicle used. The name, place of business, and number of license must be placed on each wagon. Persons selling milk in a store or booth must procure a similar license. Penalty for violation of law, \$25 to \$100, or imprisonment 1 or 6 months, or both.

Cheese.—The State dairy commissioner is directed to issue to cheese manufacturers a uniform stencil with the words "Washington whole cream cheese" and the number of the factory. This stencil may be used only upon cheese containing 30 per cent of butter fat and manufactured exclusively from pure and wholesome milk. Cheese containing less than 30 per cent of butter fat shall be marked "skimmed cheese" in letters not less than 1 inch high. The manufacture and sale of cheese containing less than 15 per cent of butter fat or of "filled" cheese, made by adding butter or foreign fats, is prohibited. Cheese not made in the State but sold therein must be marked so as to indicate its character. Penalty same as for milk.

Imitation butter.—It is unlawful to manufacture or sell, or to serve to patrons of a hotel or boarding house or to the inmates of a public or private school or penal institution, any article in imitation of butter which is not produced wholly from unadulterated milk or cream. Oleomargarine may be sold in a distinct form in such a manner as to advise the consumer of its character, free from coloration or ingredients which cause it to resemble butter. Hotel and boarding-house keepers may serve oleomargarine if they post a conspicuous notice to that effect. Penalty same as for milk.

Butter.—The State dairy commissioner shall issue to manufacturers of creamery butter a uniform brand with the words "Washington creamery butter" and a number for each factory. This brand may be used only on pure creamery butter.

Butter known as "process butter" may be sold only in packages marked in letters not less than 1 inch high "renovated butter." Retail dealers in such butter must keep it conspicuously marked and furnish wrappers properly marked with each parcel sold. Penalty as for imitation butter.

(Laws of 1899, ch. 48.)

WEST VIRGINIA.

Adulteration of food.—It is unlawful fraudulently to adulterate food or drink, or knowingly to sell food or drink which is not what it is represented to be. Penalty, not more than \$500, and imprisonment not more than 1 year. (Code, 1899, ch. 150, sec. 20.)

Unwholesome food.—Whoever sells knowingly unwholesome or diseased food or drink without making its character known to the buyer shall be imprisoned not more than 6 months and fined not more than \$100. (Ibid., sec. 19.)

Imitation butter and cheese.—The law prohibits the manufacture or sale of any substance in imitation of butter or cheese not made wholly from pure milk or cream, unless each package or parcel has distinctly marked its true name and the fact that it is not genuine. Each retail purchaser must be given a statement that the article is not genuine. Penalty, \$10 to \$100. (Ibid., sec. 20a.)

It is unlawful to manufacture or sell oleomargarine, imitation or adulterated butter, whether manufactured within the State or not, unless colored pink. Penalty, \$20 to \$100. (Acts of 1891, ch. 8.)

WISCONSIN.

FOODS GENERALLY.

Dairy and food commissioner.—The governor is to appoint biennially a dairy and food commissioner, whose salary shall be \$2,500 per year. The commissioner may appoint two assistants, one an expert as to dairy products and the other a practical chemist. It is the duty of these officers to enforce the laws relating to foods. They have power to enter any place where they believe food or drugs are made or sold, to open any package and take samples. On the request of the person in charge a duplicate sample shall be sealed up and delivered to him. District attorneys must prosecute violations of the pure-food law when called upon by the commissioner. The State board of health may submit to the commissioner articles of food and drugs for analysis. (Laws of 1899, ch. 452.)

Adulteration of foods.—The adulteration of any article of food or of any drug or the sale of such adulterated articles is prohibited. A drug is deemed adulterated if it differs in strength or purity from the standard fixed by the United States Pharmacopoeia, or by such other pharmacopoeia or standard work as recognizes the article, or if its strength or purity falls below the professed standard under which it is sold. Food is deemed adulterated if any substance has been mixed with it so as to injure its quality or strength; if any inferior substance has been substituted in it; if any valuable constituent has been taken from it; if it is an imitation; if it contains diseased or decomposed animal or vegetable matter; if it is colored or otherwise made to appear better than it really is; or if it contains any added poisonous ingredient or ingredient injurious to health not a necessary ingredient in its manufacture. Mixtures or compounds recognized as ordinary articles of food or drink may be sold if not injurious to health, if containing all necessary and no unnecessary ingredients, and if distinctly labeled as such. (Penalty, \$25 to \$100. (Laws of 1897, ch. 166.)

Unwholesome food.—Whoever sells knowingly any article of food or drink or any drug which is decayed or otherwise unwholesome, without notice to the buyer, shall be fined not over \$100 or imprisoned not over 30 days or both. (Rev. Stats., sec. 4599.)

Vinegar.—No vinegar shall be sold as cider vinegar which is not the legitimate product of pure apple juice or which contains less than 2 per cent of cider vinegar solids. All shall contain not less than 4 per cent of absolute acetic acid. No person shall manufacture or sell vinegar containing lead, sulphuric acid, or other injurious ingredients. All packages containing vinegar shall be branded with the acetic acidity of the manufacturer. Penalty, \$10 to \$100. (Laws of 1891, ch. 349.)

Canned goods.—The manufacture or sale of canned goods is prohibited unless each can, except of goods brought from foreign countries, is distinctly labeled with the name and address of the dealer and the grade of the contents. (Ibid., sec. 4.)

Baking powder.—Baking powder which contains alum must be distinctly marked with the name and place of business of the manufacturer and the words "This baking powder contains alum." (Ibid., sec. 5.)

DAIRY PRODUCTS.

Generally.—The law prohibits the sale of milk or cream, butter or cheese to which boracic acid, salicylic acid, or other injurious antiseptics have been added. Penalty, \$25 to \$100. (Laws of 1895, ch. 168.)

It is not lawful for any charitable or penal institution to use or to furnish to its inmates any imitation of butter or cheese. (Laws of 1893, ch. 65.)

Milk.—The law prohibits the sale or the delivery to any butter or cheese factory, as pure and wholesome, of milk diluted or adulterated, or of unclean or impure milk, or milk from which cream has been taken or from which the stripplings have been withheld, or milk from sick cows or cows kept in an unhealthy condition or fed upon unhealthy food, or cows within 15 days before or 4 days after parturition. Penalty, \$25 to \$100. (Laws of 1887, ch. 157, as amended by laws of 1889, ch. 425; Laws of 1897, ch. 106.)

No person shall sell milk drawn from sick or diseased cows, or cows kept in a filthy and unsanitary condition, or cows fed on refuse from distilleries or vinegar factories, unless such refuse be mixed with other dry sanitary food to the consistency of a thick mush. No person shall sell milk or cream having any foreign substance or coloring matter, or chemical or preservative, but viscogen or sucrate of lime may be added if the milk is so labeled as to show its true character. (Laws of 1899, ch. 313.)

Imitation butter.—The law prohibits the manufacture and sale of any compound in imitation of yellow butter which is not produced exclusively from pure milk or cream. Oleomargarine may be sold in a separate form so as to advise the consumer of its real character, free from coloration or ingredients causing it to look like butter. It is unlawful to sell an imitation to any person asking for butter. Each package containing oleomargarine or similar imitations shall be distinctly marked as such, in letters at least 1 inch long, and a similar label shall be placed across the contents of the open package when offered for sale. Persons selling such substitutes shall post conspicuously a notice, to be approved by the State dairy commissioner, to that effect. Wagons used for delivering these imitations must be similarly marked. Hotel or boarding-house keepers serving imitation butter must notify each guest of the fact.

Penalty for violation of these laws, \$50 to \$500 for the first offense; subsequent offenses, \$100 to \$500, or imprisonment 10 to 60 days, or both. (Laws of 1895, ch. 30.)

Cheese.—Every person manufacturing cheese shall distinctly mark on each package his name and the location of the factory. Cheese made from milk containing more than 8 per cent of pure butter fat shall be branded, with uniform stencils furnished by the dairy commissioner, "Wisconsin full cream cheese," and no other shall be so branded. It is unlawful to manufacture "filled" cheese produced from skimmed milk to which any foreign fat has been added. Skimmed-milk cheese may be manufactured if so conspicuously marked. Another law prohibits the manufacture of imitation cheese. Different fines and penalties are imposed for violation of these various provisions. (Laws of 1893, ch. 228; Laws of 1895, ch. 30; Laws of 1897, ch. 189.)

WYOMING.

Adulterated food.—It is unlawful to adulterate or dilute any article of food, drink, or medicine with fraudulent intent, or to sell such adulterated article as pure. Penalty not over \$500, or imprisonment not over 60 days, or both. (Rev. Stats., 1899, sec. 5109.)

Unwholesome food.—The law prohibits the sale of any article of food, drink, or medicine which is tainted or otherwise unwholesome, or the flesh of any diseased animal. Penalty, not more than \$50, or imprisonment not more than 30 days, or both. (R. S., 1899, secs. 5108, 5110.)

Adulteration of drugs.—It is a misdemeanor to adulterate any drug or medicine or to remove any ingredient in such a way as to injure its quality, or to sell such adulterated or inferior article knowingly. (R. S., 1899, sec. 2223.)

Candy.—It is unlawful to manufacture or sell candy adulterated with terra alba, barytes, or other mineral substance, or with colors or flavors or other ingredients injurious to health. Penalty, \$50 to \$100. (R. S., 1899, secs. 2668-2670.)

EXHIBIT NO. 4.

PURE-FOOD LAWS OF EUROPEAN COUNTRIES AFFECTING AMERICAN EXPORTS.

PREPARED UNDER THE DIRECTION OF

H. W. WILEY,

Chief Chemist of the U. S. Department of Agriculture,

BY

W. D. BIGELOW,

Second Assistant Chemist.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF CHEMISTRY,
Washington, D. C., January 3, 1901.

SIR: I transmit herewith, for your inspection and approbation, the manuscript of Bulletin No. 61, of the Division of Chemistry, containing abstracts of the laws regulating the sale of food products in foreign countries.

This bulletin has been prepared, by your direction, in accordance with the provisions made by the act of Congress providing for an inspection, by the Secretary of Agriculture, of food products intended for export to foreign countries.

H. W. WILEY,
Chief Chemist.

Hon. JAMES WILSON,
Secretary of Agriculture.

INTRODUCTION.

Food products exported from the United States to foreign countries are sold in accordance with the local regulations of the several countries into which they are imported. In order that our food products may successfully meet the requirements of foreign legislation, it is important that they be inspected before shipment and a certificate of their composition be furnished for the use of the officials of foreign countries.

The Secretary of Agriculture is empowered by the Congress of the United States to conduct an inspection of this kind in an enactment which authorizes—

the Secretary of Agriculture to investigate the character of the chemical and physical tests which are applied to American food products in foreign countries, and to inspect before shipment, when desired by the shippers or owners of these food products, American food products intended for countries where chemical and physical tests are required before said food products are allowed to be sold in the countries mentioned.

In harmony with the first part of this authority, this bulletin has been prepared especially for the benefit of our exporters of foods, in order that they may know the exact conditions in which their foods must be to comply with the legal restrictions of foreign countries.

This bulletin does not assume to give the full text of all the pure-food laws of foreign countries, nor does it enter into the decisions of the courts, in the several countries mentioned, relating to the execution of these laws. It simply gives a brief summary of the points which are most important and with which our exporters of foods should be thoroughly acquainted. If the foods which are sent abroad are in condition to meet the requirements contained in this bulletin, it is not probable that they will be subjected to any hurtful restraint.

Furthermore, when the inspection of such exported foods has been thoroughly established the exporter will be furnished with an official certificate which can be presented to the officers of foreign countries charged with the enforcement of pure-food laws. Our food products on reaching foreign countries should thereby be protected from erroneous or incomplete analysis or unjust discrimination, either from the analytical or legal point of view.

The suspicion has been at times justly entertained that American food products in foreign countries have been condemned and refused sale on insufficient grounds. The inspection of our food products before shipment to foreign countries should allay this suspicion and should also result in securing greater freedom from adulteration, and this is one of the great points of advantage which should accrue from the rigid execution of the law authorizing inspection. The manufacture and sale of adulterated food products under the guise of pure foods should be prohibited whether intended for home consumption or for exportation. We can not afford to follow the example of some countries which exercise a rigid control of food products intended for home consumption, but are lenient in the control of similar food products intended for export to foreign countries. It is quite certain that we are receiving in this country many food products so adulterated as to exclude them from sale in the countries where they are manufactured. The honesty of commerce and the good character of our foods can be best conserved by requiring for our products exported to foreign countries the same freedom from adulteration, the same purity, and the same excellent condition which we expect of similar products consumed at home.

One great source of the wealth of our country is the exportation of food products. The continued prosperity of our agricultural interests depends largely on extending our foreign markets. It is evident that one of the best ways of doing this is to send to foreign countries only food products of the highest grade and above suspicion of adulteration. This bulletin, placed in the hands of our exporters of foods, will guide them in their efforts to secure this high standard of exports, and the cordial cooperation of all exporters is invited to secure to the fullest possible extent a proper execution of the provisions of the act of Congress relating to this matter.

Regulations for securing samples for inspection and for issuing certificates thereof are now in preparation and will be ready for distribution in a short time to exporters of food products (other than meat products, which are already provided for under the inspection regulations of the Bureau of Animal Industry), and to others interested in the extension of our markets for agricultural products in foreign countries. Applications for these regulations are invited. Such applications will be placed on file, and the requests will be complied with at the earliest possible moment.

H. W. WILEY,
Chief Chemist.

PURE-FOOD LAWS OF FOREIGN COUNTRIES AFFECTING AMERICAN EXPORTS.

GENERAL SUMMARY.

With the exceptions noted below, almost any food product which is in a good state of preservation and is labeled plainly and distinctly, and in such a manner as to give a true idea of its character, may be sold in any country.

MEAT PRODUCTS.

The new German law prohibits the importation of canned meat, sausage, and macerated meat of all descriptions. Fresh meat may be imported under restrictions. The addition to meat of preservatives and coloring matter is usually prohibited.

DAIRY PRODUCTS.

The requirements of various countries regarding dairy products are very similar to those affecting meat. Butter and cheese substitutes are required to be branded according to carefully prescribed directions, and the amount of butter fat which these substitutes may contain is limited. Belgium requires that oleomargarine shall be sold uncolored, while in Holland and Denmark a maximum depth of color is prescribed.

WINE AND BEER.

Only the fermented juice of the fresh grape, subjected to the usual cellar manipulation, whose limits are carefully defined in the various countries, may be sold as wine. If any other saccharine matter or any foreign material be employed, the product must be so designated as to indicate the fact. Prohibition of the use of chemical preservatives and aniline dyes is almost universal, while the employment of all foreign coloring matter is often prohibited.

The use of chemical preservatives and foreign coloring matter with beer is usually prohibited.

CEREAL PRODUCTS.

Almost all countries require that cereal products shall be prepared from grain that is free from dirt and fungi, mineral matter, and other impurities. The mixture of the ground product of various cereals, or of cereal flour with pea flour, etc., is permitted only when properly labeled.

SUGAR, GLUCOSE, AND CONFECTIONS.

Sugar, glucose, etc., must be commercially pure and must be free from admixture with any foreign substance. Confections may be colored by harmless coloring materials (a list is usually specified), but must be prepared from pure ingredients and must be free from adulteration of any description.

ARTIFICIAL SWEETENING MATERIALS.

The sale of foods containing saccharin, sucrol, and similar preparations is prohibited in Belgium, France, Germany, Italy, and Roumania. The importation of saccharin except for medicinal use and under prescribed conditions is prohibited by Belgium and Greece.

COLORING MATTER.

All countries permit the dyeing of confections and similar articles which are themselves colorless, but are customarily colored artificially. Lists of permissible and of prohibited colors have been adopted by Austria, Belgium, France, Germany, Roumania, and Switzerland. Belgium permits mustard to be colored artificially when properly labeled. Belgium and Holland require that wine to which coloring matter has been added shall be so marked as to indicate that fact. The addition of injurious coloring matter to wine is prohibited in Denmark, France, and Tunis.

CHEMICAL PRESERVATIVES.

The sale of foods containing these substances is usually prohibited. Salicylic acid and boric acid have been used so much more commonly than others that legislation is usually directed against them, though boards of health and similar bodies which have discretion in the matter usually extend the prohibitions to benzoic acid and other preservatives as they come into use.

The sale of foods containing preservatives is prohibited in Austria, France, Hungary, and Roumania. The sale of beverages containing preservatives is prohibited in Belgium, Germany, Tunis, and Switzerland. The addition of salicylic acid to food is prohibited in Buenos Ayres and France. Holland does not permit the sale of beer containing salicylic acid, and Spain forbids its addition to wine. Italy permits the addition of 0.2 per cent of boric acid to butter, but forbids the use of other preservatives.

CONTAMINATION WITH METALS.

Strict regulations regarding the content of poisonous metals of food receptacles and utensils used in the preparation of foods have been adopted by Austria, Belgium, France, Germany, and some of the cantons of Switzerland.

AUSTRIA.

COLORING MATERIALS.

The use of colors which contain any metal except iron and the use of gamboge, picric acid, and all aniline derivatives for the purpose of coloring food and food products is forbidden.

For coloring toys, preparations containing arsenic, antimony, lead, cadmium, copper, cobalt, nickel, mercury (cinnabar excepted), zinc, or gamboge are prohibited. The use of other metallic colors for coloring toys is permitted, provided the color be coated with a waterproof varnish. The colors whose use is forbidden with toys may be employed with earthenware, provided they are covered with a glaze which is burned in.

The use of poisonous colors, such as arsenic preparations, with artificial flowers and similar substances, is forbidden unless the article be covered over with a waterproof varnish. Wall paper and similar material must not be colored with arsenic preparations.

The sale of food which has been prepared in vessels coated with poisonous colors, or stored in receptacles so coated, is prohibited. The importation and sale of wines colored with aniline dyes are prohibited. Foods and food products which are themselves white or colorless (confections, beverages, etc.), but which are ordinarily artificially colored, may be colored by any of the following substances, provided the articles so colored shall be sold from the factory only in the original packages which are distinctly labeled with the name of the material employed for coloring the contents of the package, and also with the registered seal or trade-mark of the manufacturer. The label must also bear a statement from a prescribed official laboratory (Chemischen Hochschulinstitute) that the contents of the package contain no substances deleterious to health. This statement must bear a later date than the latest decision of the health office regarding the subject and must be renewed at least annually. The list of aniline colors which may be employed under these restrictions is as follows:

Fuchsin—rosaniline hydrochlorate.

Acid fuchsin (rubin)—sodium or calcium salt of rosaniline disulphonic acid.

Rocellin—sulpho-oxyazonaphthalin.

Bordeaux red—formed by the combinations of *beta*-naphthol disulphonic acid with diazo compounds of zylol and the higher homologues of benzene.

Ponceau red—same as Bordeaux red.

Eosin—tetrabrom-fluorescein.

Erythrosin—tetraiodo-fluorescein.

Phloxin—tetrabrom-dichlor-fluorescein.

Alizarin blue— $C_14H_8NO_4$.

Aniline blue—triphenyl rosaniline.

Water blue—triphenyl rosaniline sulphuric acid.

Induline—the sulphonlic acid compound of azo-diphenyl blue and its derivatives.

Acid yellow R—the sodium salt of amido-azo benzene sulphonic acid.

Tropæolin OOO—sulpho-azo benzene- α -naphthol.

Methyl violet.

Malachite green.

Naphthol yellow.

In addition to the above, only the following colors may be added to food:

White.—Tragacanth.

Red.—Cochineal, carmine, kermes, infusion of red poppy.

Yellow.—Saffron, safflower, turmeric.

Blue.—March violet, blue bottle, indigo, prussian blue, ultramarine, sea blue (form of artificial ultramarine).

Green.—Spinach juice.

Violet.—Cochineal infusion with lime water.

Gold.—Pure gold leaf.

Silver.—Pure silver leaf.

Wrappers for confections, coffees, and other varieties of food must either be white or prepared from material which is naturally colored. If a wrapper which is artificially colored be employed, a second wrapper of the character above described must be placed between it and the inclosed product, and no artificially colored wrapper may be used in any case to inclose any but a dry, solid material. The use of wrappers containing copper salts is especially prohibited.

RECEPTACLES.

Food receptacles and utensils intended for the preparation of food must not be either partially or entirely composed of an alloy containing more than 10 parts of lead per 100 parts of the alloy. The inside of such receptacles must not be coated with tin which contains lead. Such receptacles must not be soldered with an alloy containing more than 10 per cent of lead. In case of glazed and enameled ware, lead must not be present in such state that it will be dissolved by boiling one-half hour with a 4 per cent solution of acetic acid. The glass or enamel must not be so attached to the vessel that it will scale off. Metallic parts of nursing bottles must not contain more than 1 per cent of lead. Metal foil, which is used as a wrapper for such products as snuff and tobacco, must not contain more than 1 per cent of lead. Vessels which have been cleaned with the aid of leaden shot must not be used as receptacles for food products. The sale of food products which have been ground with millstones filled with lead or an alloy containing lead is prohibited.

Rubber or caoutchouc which contains lead or zinc must not enter into the composition of such articles as nipples of nursery bottles, rubber rings, nipple shields, etc., or as receptacles for such articles as beer, wine, vinegar, and preserves, or of vessels which are to be used in the preparation of food products or as receptacles for the same.

If antimony sulphid enters into the composition of vessels which are used in connection with food products, it must be so prepared that no antimony is dissolved by a dilute solution of tartaric acid. Copper and brass vessels must not be used in the preparation of foods unless

the inner side be coated with lead-free tin. All manipulations are prohibited which could by any means bring copper compounds into the composition of food materials.

The addition of fluorids to foods is especially prohibited, as is also the addition of salicylic acid to wine.

MUNICIPAL REGULATIONS OF VIENNA.

Municipal regulations for Vienna prescribe that the term "butter" shall be used only for the exclusive product of pure milk or cream. Fats from all other sources must be designated as margarine butter, lard, or compound lard, according to their character. Margarine butter must be molded in brick-form prints, and the words "Margarinebutter" must be marked on every print in distinct characters of such size that the words shall extend the entire length of the print. The wrapper in which each print is sold must also be marked in distinct indelible characters with the words "Margarinebutter." Every receptacle containing compound lard must be distinctly printed with the name "Margarineschmalz" or "Kunstfett." The terms "Echtebutter" or "Butterschmalz" are applied only to articles containing fat obtained from pure milk. "Schweinfett" must be used only to designate pure lard. "Margarinebutter" is applied to all butter substitutes which do not consist exclusively of butter fat. "Kunstfett" is used to designate compound lard.

BELGIUM.

EDIBLE FATS.

The word "lard" must be applied only to pure unmixed swine fat. All other edible fats, excepting butter and margarine, must be so marked as to indicate exactly their origin, or with the words, "mixed fat" (*graisse mélangée*).

All receptacles containing other edible fats than lard, butter, and oleomargarine, must be plainly marked as described above, and also with the name of the manufacturer or dealer, or with some registered mark.

Lard and other edible fats which contain more than 1 per cent of water or salt must be labeled, "watered" (*aqueux*), or "salted" (*salé*). The addition of mineral substances, other than salt, and of chemical preservatives and glycerin is forbidden.

It is forbidden to sell spoiled or deteriorated edible oils as food. All receptacles containing oils must be branded with the word "oil" immediately preceded by a word in similar type which will give the true and exact source of the contents of the receptacle; for instance, olive oil, peanut oil, sesame oil, etc.

BUTTER.

The term "butter" must be used only with reference to fat obtained exclusively from milk or cream with or without the addition of coloring matter or salt. All butter containing other additions and all butter substitutes must be designated as margarine. Margarine must not contain more than 5 per cent of butter fat and must not be artificially colored. The maximum color permitted in margarine may be decided by the minister of agriculture. These regulations regarding the addition of butter fat to margarine and the height of color of the same are not applied to margarine intended for export from Belgium.

The receptacles and packages which contain margarine must be plainly labeled with the word "margarine" in letters at least 2 cm high, as well as the name of the manufacturer or dealer. Margarine which is not in packages must be molded in cubical form with the word "margarine" impressed, as well as the name of the manufacturers or dealers. The sale of rancid butter or butter made from the milk of diseased or improperly fed cows is forbidden. It is also required that margarine shall be fresh and made from the fat of healthy animals. The addition of glycerin to butter and margarine is prohibited.

COCOA AND CHOCOLATE.

The term "cocoa mass" must be used exclusively for the product of the seed of the cocoa tree, whether it be raw or roasted, entire, hulled, or ground, with, or without the addition of foreign substances. Finally, such product may be melted or molded in ingots or tablet form or pulverized. The term cocoa may be applied to the prepared product of the cocoa tree from which a portion of the fat has been removed, provided that the fat content of the product is not less than 20 per cent. The term "alkalized cocoa" may be used to describe the product to which an addition of alkaline carbonate has been made to render it more soluble; but the alkaline carbonate so added must not exceed 3 per cent of the total weight of the product. Cocoa which contains more than 3 per cent of alkaline carbonate is considered unwholesome and its sale is forbidden. The characterization "alkalized" is not necessary if the product is intended for export from Belgium.

Cocoa which is prepared otherwise than by the methods described above must be marked on the wrapper with the word "cocoa," followed in the same type by words which will give an exact description of the method used in preparation. The term chocolate is applied to the product made exclusively from hulled cocoa, to which at least 35 per cent of its weight of cane sugar has been added, with or without the addition of spices.

Products which contain 35 per cent of hulled cocoa, but at the same time other substances than sugar and spices, can be sold only when

marked on the wrapper in the same type as the word "chocolate" with a word which will give an exact description of the foreign substances present, or when labeled with a name in which the word "chocolate" does not appear. When molded in tablet form, the above description must be impressed or printed in raised characters on every tablet. Any preparation which contains less than 35 per cent of hulled cocoa must not be sold as cocoa bon bons or under any other name in which the word "cocoa" or "chocolate" appears. All bills and shipping receipts must be designated in the same manner as the preparations described above. All packages of cocoa must be marked with the name of the manufacturer or dealer or with the registered mark. These provisions apply to ordinary chocolate in tablet, block, or powdered form, or chocolate croquettes, but not to special preparations containing chocolate sold by confectioners and bakers.

CHICORY.

The term "chicory" must be applied exclusively to the product of the chicory root, either in its natural condition or by any appropriate treatment, such as roasting, powdering, drying, etc. Chicory must not contain more than 15 per cent of water (dried at 100° C.). The ash content of the dried material must not exceed 10 per cent when finely powdered, or 8 per cent when coarsely powdered. Chicory must not lose more than half its weight when extracted with boiling water. Chicory which is put up in packages, with the weight of the contents marked on the package, may have a higher water content than 15 per cent if the weight of substance in the package is correspondingly greater than that stated on the label. An addition of fat or saccharine matter not exceeding 2 per cent of the total substance is permitted. Bags and other receptacles in which chicory is shipped or sold must bear the name of the packer or dealer, or some registered mark.

MUSTARD.

The sale of any substance other than a mixture prepared of ground black and white mustard seed, under the unqualified name of "mustard," is prohibited. All similar preparations, such as those containing pepper, estragon, rice, and foreign coloring matter, can be sold only when each package bears in the same type as the word "mustard" the names of all foreign substances present, or the designation "prepared mustard," or some designation not containing the word mustard may be employed. In the preparation of mustard the use of vinegar which does not comply with the law of January 3, 1894, is prohibited. The use of deteriorated, decayed, or unwholesome substances in manufacturing prepared mustard is forbidden. Mustard preparations which do not comply with these requirements and are not intended for use

as a condiment must be plainly labeled with a statement of the use for which they are intended. All packages of mustard and mustard preparations must be marked with the names of the manufacturers or dealers or with a registered label.

FISH.

Fresh or preserved fish which has been mixed with matters other than spices, condiments, aromatic jellies the principal ingredient of which is gelatin or gelose, must not be sold unless a plain label shall indicate the nature of the foreign substance used. Canned-fish products must have a label showing the kind of fish, and also, if necessary, the kind of oil, etc., used. Fish, shellfish, etc., caught with Indian berry (*Coccus indicus*) or other poisonous substances and those mixed with antiseptics are declared injurious. No substances injurious to health are allowed to be used. Receptacles containing fish must bear the name and address or the registered mark of the seller. It is further forbidden to sell or keep in the same premises with food products fish not intended for alimentary purposes unless these are clearly marked "Not eatable," or the like.

SUGAR.

It is provided that the word "sugar" and similar terms shall refer only to the product obtained from the juice of sugar cane, sugar beet, and similar plants. All other products, such as dextrose, which are used for sweetening purposes must be properly labeled. Mixtures of cane sugar with other materials, such as dextrose, can be sold only when so labeled as to inform the purchaser of the character of the goods.

White sugar must not contain more than 0.2 per cent of mineral substances, raw sugar not more than 2.5 per cent of mineral substances, and glucose not more than 0.8 per cent of mineral substances. Glucose must not contain more than 0.05 grams of free acids (calculated to sulphuric acid) per 100 grams of dry matter, nor appreciable quantities of oxalates, oxalic acid, arsenic compounds, lead, zinc, or barium.

Sugar must not be deteriorated in any manner—for instance, coated with mold. The addition of preservatives and the presence of fungicides are forbidden. Bags, barrels, and other receptacles must be plainly marked with the name of the manufacturer or dealer.

SACCHARIN.

The importation, manufacture, shipping, and selling of saccharin and other products, which are formed synthetically and possess a sweet taste similar to that of sugar but have no nutritive value, are prohibited. The use of saccharin and similar products in the preparation of foods and the sale of foods containing them are also prohibited.

FLOUR AND BREAD.

The words "flour" and "bread" must be used exclusively to denote wheat products. For designating the product of any other cereal it is necessary to employ also the name of that cereal, for instance, "rye flour," "rye bread," etc. Mixtures of rye flour with other cereals must be designated by the word "méteil." Flour must be manufactured from grain which is sound and in good condition and which has been thoroughly cleaned. The sale of flour which is adulterated with mineral matter is prohibited. The word "tapioca" must be used exclusively to refer to food products derived from the cassava root.

WINE.

In the application of these regulations one understands—

(1) By wine, the product of alcoholic fermentation of the juice or must of the fresh grape.

(2) By sweet wines or liqueurs or cordials ("vin de liqueur" or "vin de dessert"), the product of alcoholic fermentation, whether it be of the juice or must of the grape, more or less dried, or concentrated by evaporation, containing usually about 14 to 18 per cent of alcohol and an excess of natural grape sugar.

(3) By sparkling wines (vin mousseux), the product of the fermentation of the juice or must of the fresh raisin surcharged with pure carbonic acid.

(4) By wine of the second vat, wine made from the residuum of grapes (piquette), wine from the lees or dregs, wine from the dried grape, sparkling wine from the dried grape, cider, sparkling cider, hydromel, etc., the vinous beverages which present an analogy with wines and which are the product of the fermentation of the juice or must extract of the dregs or lees of the fresh or dried grape, of the juice of the apple, of honey, etc., with or without the addition of sugar, alcohol, or pure carbonic acid.

It is forbidden to sell or expose for sale, to hold, or transport for sale or for delivery as wine, any wine to which foreign substances have been added.

This prohibition does not apply to the following:

(1) The addition of clarifying agents acting mechanically (albumin, gelatin).

(2) The addition of ordinary salt on condition that the content of chlorids, calculated as sodium chlorid, does not exceed 2 grams per liter.

(3) The addition of gypsum on the condition that the content of sulphates, calculated as potassium sulphate, does not exceed 2 grams per liter.

(4) The presence of sulphurous acid, because of sulphuring the casks, on condition that the wine shall not contain more than 2 milligrams of free sulphurous acid nor more than 20 milligrams of total sulphurous acid per 100 cc.

(5) The addition of pure sugar or alcohol, provided that the receptacles in which the wine is placed shall bear in a conspicuous place and in plain characters, as large and as conspicuous as any other letters used for other inscriptions, the word "sugared" or "alcoholized" ("sucré" or "alcoolisé"), as the case may be, and that this statement be reproduced on the invoice, the bill of lading, or the booking-office ticket.

Wine, as well as the vinous beverages having an analogy to wine, to which have been added foreign substances, with the exception of those enumerated above, can not be kept for sale, exposed for sale,

for delivery or retail, except in receptacles bearing in a prominent place and in legible characters, as large and as conspicuous as those employed for any other inscription, an indication of the materials introduced in their preparation, for example, "watered wine," "colored wine," "aromatized wine," "dried grape wine," "cherry wine," or an inscription sufficiently clear to make known their origin, such as "piquette," "cider," "hydromel." This statement need not include the names of the vineyards of true and natural wines. These should be found in the invoices and the bills of lading or booking-office tickets.

Wines, liqueurs (*vins de liqueurs*), sparkling wines, and vinous beverages to which the following substances have been added are declared injurious:

Ethers, or essential oils (oil of wine);

Bitter almond, cherry, laurel;

Alkaloids;

Compounds of arsenic, lead, zinc, aluminum, barium, strontium, calcium, magnesium, alkalies;

Mineral acids, free or combined oxalic acid;

Salicylic acid or other antiseptics (with the exception made in favor of sulphurous acid in the amount specified);

Glycerin;

Sugars, cask sugars, or impure alcohol, the sale of which is forbidden for edible purposes by the rules relative to those commodities; alcohols other than ethyl alcohol;

Sulphates, in greater quantity than indicated above, or of more than twice that quantity in the case of liqueurs (*vins de liqueurs*).

It is forbidden to add to wine or liqueurs (*vin de liqueur*), to sparkling wines, or vinous beverages, any of the substances mentioned above, or any other substance injurious or dangerous to the health.

All casks in which wine, liqueurs, and vinous beverages will be exposed for sale or delivered must bear the name of the firm, as well as the address, or at least the registered mark of the maker or seller.

DENMARK.

WINE.

The following additions to wine are prohibited:

Alum, or other soluble aluminum salts; barium compounds; strontium compounds; magnesium compounds; boric acid; salicylic acid; spirits containing fusel oil; crude (not technically pure) glucose; kermes; injurious coloring material; glycerin; saccharin; flavoring materials, such as ethereal oils, essences, etc.; gums, and other organic and inorganic materials intended to increase the extract content.

The following additions are permitted without declaration:

The use of common clarifying agents, such as albumin, gelatin, isinglass, Spanish earth, and other common substances; the neutralization of excessive acid with precipitated calcium carbonate; the customary sulphuring of casks; the pasteurization of wine; the blending of wines (in blending only dry wines may be mixed with dry wines).

Dry wines must not contain more than 0.2 gram of sulphuric acid (calculated to potassium sulphate) per 100 cc. The addition of foreign coloring matter is prohibited unless the same is declared on the label. The addition to dry wines of saccharine matter either in a solid state or in solution is permitted if the same is stated on the label. The same is true of the addition of water. These provisions do not apply to red wines which are rich in extract and coloring matter and hence in their natural state not suitable for consumption, provided that after treatment such wines shall not contain less than 2 grams of sugar-free extract per 100 cc, and that no sugar other than the ordinary grape sugar shall be found in the extract. Wines which shall receive an addition of water and which fulfill the required conditions of percentage of extract, etc., may be blended with other wines of normal composition without regard to the extract content of the blend so produced. The addition of alcohol to dry wine must be indicated on the label; this, however, does not apply to the alcohol necessary for ordinary cellar manipulation. The alcohol so employed must be fully refined and of not less than 93.25 per cent by volume, and the amount added must not exceed 2.5 liters for 240 liters of wine. In the case of wines which are not fully fermented and whose sugar content is such as to make it doubtful whether they should be classified as dry or as sweet wines, the addition of alcohol of not less than 93.25 per cent per volume in such quantity that the alcohol content of the product shall not exceed 17 per cent per volume is permitted. Port wine, sherry, madeira, and liqueurs from foreign lands must conform to the customary composition of these wines in the country where they are produced. These wines may be manufactured from dried grapes under the condition that the alcohol content shall not exceed 25 per cent per volume, and the sugar-free extract shall not be less than 2 grams per 100 cc. On the other hand, the addition to these wines of sugar or other material which is not the product of the grapes, without indicating the same on the label, is prohibited. Wines of this class which are too low in alcohol may be fortified with alcohol of not less than 93.25 per cent by volume. The alcohol content of the product must not exceed 25 per cent by volume. Dessert wines must be the customary product of the region of their production with the exception that they may receive the ordinary cellar manipulation. The term "champagne" may be applied only to wines fermented under pressure. Carbonated wines may be sold if properly designated.

Cognacs, rum, and arak must not receive the addition of alum or other soluble aluminum salts, barium compounds, strontium compounds, magnesium compounds, boric acid, salicylic acid, alcohol containing fusel oil, crude glucose, kermes, or other unwholesome materials.

OLEOMARGARINE.

This product must be branded and put up in prints in a prescribed manner; it must not contain more than 50 per cent butter fat, and the shade of color permissible is fixed.

ENGLAND.

All adulterated or impoverished articles of food must be in packages conspicuously marked with the true description of the contents of the package. The addition to foods of coloring materials and preservatives which are harmless in the quantity employed is permitted.

It is required that margarine, filled cheese, etc., be conspicuously marked on the top and sides of each package with the words "margarine" or "margarine cheese," as the case may require. Margarine must not contain more than 10 per cent of butter fat. Adulterated or impoverished butter, other than margarine, must be in packages so marked as to indicate the exact nature of the contents of the package.

Every can of condensed, skimmed milk must have a label clearly visible to the purchaser, on which the words "machine-skimmed milk" or "skimmed milk," as the case may require, are printed in large, legible type.

FRANCE.

The law of February 2, 1899, regulates the commerce in fertilizers, butter, and wines especially; it also applies to all articles of merchandise of whatever nature. Misrepresentation concerning the nature, quality, or quantity of articles covered by this law is prohibited.

Cans and similar receptacles containing food must not be coated with an alloy containing more than 0.5 per cent of lead or 0.01 per cent of arsenic, and must not be soldered with an alloy containing more than 10 per cent of lead or 0.01 per cent of arsenic.

Only lead-free tin foil may be used as wrappers for food materials.

BUTTER AND BUTTER SUBSTITUTES.

The term butter shall be applied only to products made exclusively from milk or cream. All other fat materials having the appearance of butter must be sold as margarine, and must not contain more than 10 per cent of butter fat. The receptacle containing oleomargarine must be indelibly branded with the word "margarine" or "oleomargarine." The constituents of the contents of the receptacle and the percentage of each constituent present must be given on all bills rendered for such goods. In wholesale trade, the name and address of the manufacturer must be given on the receptacle containing margarine. If sold at retail, margarine must be in cubical prints with the word "margarine"

or "oleomargarine" impressed on one side of the print. Each print must also be inclosed in a wrapper on which the word "margarine" or "oleomargarine" is indelibly printed. Every bill, letter, and package in any way relating to the sale or transportation of margarine must be distinctly marked with the word "margarine" or "oleomargarine."

WINE.

The addition of sulphuric acid, nitric acid, hydrochloric acid, salicylic acid, boric acid, and analogous substances, as well as the addition of coloring matter, is prohibited. Wine must not contain more than 0.1 gram of sodium chlorid per 100 cc, or more than 0.2 grams of potassium sulphate.

Wine is defined as the fermented juice of the grape treated in no way except by the ordinary cellar manipulation, including the addition of sufficient water to the must to reduce its sugar content to 29 grams per 100 cc, or the dilution of sufficient pure alcohol to give a normal composition to very low wine. The addition of both alcohol and water to the same must or wine is not permitted under any circumstances.

The product of the fermentation of the lees, with or without the addition of sugar, and mixtures of the same with wine, can be sold only as "Vin de marc" or "Vin de sucre," and receptacles in which the same is sold must be conspicuously labeled with an orange-colored label containing the appropriate name.

The product of the fermentation of dried raisins, and mixtures of the same with wine, can be sold only as "Vin de raisins sec," and must bear in a conspicuous place a label of green paper marked with its correct name.

COLORING MATERIALS.

Foods and food products must not be colored with any mineral substance, except that prussian blue, ultramarine, chalk, and ochre may be used with confections or similar products. Confections and other products must not be inclosed in wrappers which are colored with the prohibited substances. All confections inclosed in packages must bear the name and address of the manufacturer or dealer. The use of litharge, lead acetate, and similar compounds for clarifying saccharine products and fermented beverages is forbidden.

The use of the following coloring materials with foods is prohibited:

Mineral colors:

Compounds of copper, lead, arsenic, and mercury, and barium chromate.

Organic colors:

Gamboge; aniline derivatives, such as fuchsin, Lyon blue, flavanilin, methylene blue; phthaleins and their derivatives, such as eosine, erythrosin; nitro compounds, such as naphthol yellow and Victoria yellow; diazo compounds, such as tropoelins and xylylne red.

As exceptions to the above general regulations, however, the following compounds may be employed in coloring confections, pastry, and liqueurs, which are ordinarily white or colorless:

Rose colors:

Eosine (tetra brom-fluorescen).

Erythrosin (methyl and ethyl derivatives of eosine).

Bengal rose, phloxin (iodin and bromin derivatives of fluorescen).

Bordeaux red and Ponceau red (resulting from the action of the sulpho-derivatives of naphthol on the diaz xylenes).

Acid fuchsin (without arsenic and prepared by the Couper method).

Yellow colors:

Acid yellow (derivatives of sulphonates of naphthol).

Blue colors:

Lyon blue, light blue, Couper blue, etc., (derivatives of triphenil rosanilin or of diphenylamin).

Green colors:

Mixtures of blue and yellow named above.

Malachite green.

Violet colors:

Paris violet or methylanilin violet.

GERMANY.

MEAT.

A new law regulating the preparation, importation, and sale of meat and meat products was passed by the Bundesrath and the Reichstag in June 19, 1900, to take effect in April, 1901. Regulations for its enforcement have not yet been promulgated. The importation, except in "free ports," of meat in hermetically sealed cans and similar receptacles, and of sausage and macerated meat of all descriptions, is unequivocally prohibited.

It is provided that fresh meat must be imported in the entire body or in halves. The meat must be so dressed that the breast, diaphragm, lungs, heart, and kidneys, and, in the case of cows, also the udder, retain their natural position in connection with the body.

Prepared and preserved meat can be imported only when the method of preparation or preservation to which it has been subjected is such as to add to or produce in the meat no injurious substances.

The above requirements do not apply to corned beef, ham, bacon, or casings provided that the corned beef is not imported in pieces weighing less than 4 kilograms (8.8 pounds). Meat which has been preserved by processes which will enable it to retain all of the characteristics of fresh meat (refrigeration) is subjected to the restrictions applied to fresh meat.

The foregoing regulations are to remain in force until December 31, 1903, or until other regulations are provided.

Horse flesh can be imported only when so designated in the German language that its true nature will be understood by the purchaser.

In Prussia a regulation is in force relating to the amount of flour that may be added to the several varieties of sausage. "Fleischwurst" shall receive at the most 4 per cent. "Blutwurst" and "Leberwurst" selling for not more than 0.70 marks per half kilogram shall not contain more than 5 per cent of flour. "Plockwurst," "Cervelatwurst," "Salamiwurst," "Bratwurst," "Mettwurst," "Blutwurst" and "Leberwurst" which sell for more than 0.70 marks per half kilogram must not receive the addition of flour. Sausages which are treated with flour must be so marked as to indicate that fact ("Wurst mit Mehlzusatz").

BUTTER AND EDIBLE FATS.

All packages of butter substitutes, filled cheese, and compound lards must be branded "Margarine," "Margarinekäse," and "Kunstspeisefett," respectively. Each package must also be marked in a conspicuous place with a red stripe at least 2 cm wide for packages 35 cm high or less and 5 cm wide for higher packages. The same articles, when sold at retail, must be in wrappers marked "Margarine," etc., and also with the name of the dealer. All prints must be cubical in form and stamped "Margarine," etc., in sunken letters.

To facilitate the examination of samples, the Bundesrath has decided that all fats used in the preparation of butterine shall receive an addition of 10 per cent of their weight of sesame oil, and all fats used in the preparation of filled cheese shall receive an addition of 5 per cent of their weight of sesame oil. The sesame oil employed must be such that when a mixture of 0.5 part of sesame oil with 99.5 parts peanut or cotton-seed oil be shaken with an equal volume of hydrochloric acid (specific gravity 1.19) and a few drops of a 2 per cent alcoholic solution of furfural a marked red color is imparted to the acid layer.

Patterns of labels to be employed with butter substitutes, etc., have been adopted by the Bundesrath thus: The space within the line inclosing the label must not be more than 7 times as long as high, and must not be less than 30 nor more than 50 cm high, except that with round or oval packages whose greatest diameter does not exceed 15 cm the space may be decreased to 15 cm. Directly above this label a red strip at least 2 cm wide on packages up to 35 cm high, and at least 5 cm wide on higher ones, must extend around the package, but shall not interfere with the mark "Margarine," etc. The name of the manufacturer and the brand must be near the word "Margarine," but must not be in contact with it nor with the encircling line or red band. The designation, name of manufacturer, and brand must either be burned in or painted on white or bright yellow ground in black letters, and must be on two opposite sides of package and also on the top, if there be a top, and on both ends of casks. In prints, the pattern described above must be followed, but the limitation of size is removed, and the word

"Margarine" may be divided in two and the word "Margarinekäse" in three portions connected by hyphens.

In Prussia the terms "Smalz," "Bratensmalz," "raffinirtes Smalz," etc., can be applied only to pure lard. Mixtures containing other fats or oils must be called by such name as "Speisefett."

COFFEE.

Coffee substitutes must be inclosed in packages which bear a label stating the chief ingredients in combination with the word "Kaffee." The name of the manufacturer must also be stated on the package. Mixtures of coffee and coffee substitutes can be sold only in packages which are plainly marked so as to give the purchaser a true idea of the nature of the contents, for instance, "Coffee and coffee-substitute mixture" (Kaffee-surrogat-mischung). The name and location of the manufacturer must also be stated on the package, as well as the materials from which the product is prepared.

It is forbidden to manufacture, sell, or hold for sale machines for the preparation of artificial coffee beans.

SACCHARIN.

The manufacture and sale of foods and beverages containing artificial sweetening material (saccharin, dulcin, etc.), are prohibited.

WINE.

The law prohibits the addition to wine, wine-like, or wine-containing beverages of soluble aluminum salts, barium compounds, boric acid, glycerin, kermes, magnesium compounds, salicylic acid, impure alcohol, glucose (not commercially pure), strontium compounds, and aniline dyes; or the addition of more than 0.2 gram per 100 cc. of potassium sulphate, except in dessert wines (southern sweet wines) of foreign origin. The use of "sugar water" and "pressed" grapes; of sugar and wine yeast; of raisins, currants, and other sweetening materials than cane sugar or dextrose; of acids and flavors; of gums and other substances which influence the extract, except as hereafter provided, is prohibited unless the goods are so labeled as to indicate such additions. Raisins may be added to dessert wines (southern sweet wines). The addition of saccharin is forbidden for all wines and similar beverages. More liberty is given in sparkling wines.

The following additions are permitted:

Alcohol, not over 1 per cent by volume; small amount of clarifying agents (albumen, gelatin, isinglass, etc., sodium chlorid, carbon dioxid, and sulphur dioxid); the blending of wines; neutralization with pure precipitated calcium carbonate; addition of such amounts of technically pure sucrose, invert sugar, and dextrose as will not bring the

ratio of ash to extract below that of unsugared wines of the vicinity. The extract content must not be below 1.5 grams per 100 cc; the extract content less total acids must not be below 1 gram per 100 cc; the extract content less fixed acids must not be below 1.1 grams per 100 cc. The ash must not be below 0.14 gram per 100 cc.

UTENSILS, TOYS, ETC.

Cooking utensils and receptacles for foods and vessels used for preparation of beverages and fruit juices must not contain over 10 per cent of lead in any part. The inside must not be coated with an alloy which contains over 1 per cent lead, and solder exposed to contents must not contain over 10 per cent of lead (except solder with lead-free Britannia metal). Enamels and glazes must not yield lead on boiling one-half hour with a 4 per cent solution of acetic acid. Alloys containing over 1 per cent of lead must not be used in siphons for carbonated beverages or for metal parts of nursing bottles. Rubber containing lead or zinc must not be used for mouthpieces, nursing bottles, nipple shields, etc. Rubber containing lead must not be used for drinking cups or toys (except large balls), or for tubes for beer, wine, or vinegar. Containers must not be cleaned with shot. Snuff, chewing tobacco, and cheese must not be wrapped in foil containing over 1 per cent lead. Cans must not contain over 1 per cent lead on the inside or have exposed solder containing over 10 per cent of lead.

COLORING MATERIALS.

The following are provisions relating to the addition of coloring matter to foods, beverages, toys, cosmetics, and vessels, wrappers, and covers for foods:

The addition of the following to articles of food and drink are prohibited: Colors which contain antimony, arsenic, barium, lead, cadmium, chromium, copper, mercury, uranium, zinc, tin, gamboge, corallin, and picric acid.

Vessels, wrappers, or covers dyed with the above-mentioned colors must not be used for holding or protecting articles of food or drink. This regulation does not apply to the use of the following: Barium sulphate (heavy spar, permanent white), barium colors free from barium carbonate, chrome green, copper, zinc, tin, and their alloys, when applied as metallic colors, cinnabar, tin oxid, tin sulphid in the form of gold-bronze ("musivgold") all vitrified colors in glass, glazes or enamels, and colors on the outside of water-tight vessels.

In the manufacture of toys (including picture cards, picture books, and water colors, flowerpot covers, and artificial Christmas trees) the materials mentioned above as forbidden are not to be used. This regulation does not apply to the articles enumerated above as exceptions, nor to antimony sulphid and cadmium sulphid applied as color in

gum; lead oxid in varnish; white lead as a component of the so-called molded wax, if the same does not amount to more than 1 part in 100; lead chromate by itself or in association with lead sulphate, in oil or lacquer, covered by lacquer or varnish; zinc colors insoluble in water, in rubber toys, if used in the coloring of the rubber, or as lacquer or oil color applied with lacquer or varnish, and all vitrified colors applied with enamel.

HUNGARY.

ALCOHOLIC BEVERAGES.

The addition to alcoholic beverages of strong commercial essences with a sharp odor, especially of sharp spices and vegetable materials, such as pepper, paprika, sea onions, etc., of narcotic substances, fusel oil, or any other substance that will increase its sharp or narcotic taste, is prohibited. This prohibition does not extend to medicinal and dietetic alcoholic preparations.

The manufacture and sale of adulterated wine is prohibited. All wines are considered adulterated which are not exclusively made from grape must, with such additions as are necessary in ordinary cellar manipulation. It is also prohibited to misrepresent the location in which a wine was made or the variety of grapes used in its manufacture.

The must may receive additions of refined sugar, grape sugar, or fruit sugar, as well as dried berries and dried raisins. In the Toquay wine region these additions are not permitted, but since it is fraudulent to designate wines falsely as to the place of manufacture or the variety of grape used, this prohibition does not affect wines from foreign countries.

The addition of refined alcohol and pure cognac is also permitted, and the must may be treated with arsenic-free sulphur and the scum removed by skimming. The excessive acidity may be neutralized with calcium carbonate or potassium carbonate. In no case, however, is any addition permitted which will change the composition to an appreciable extent or cause its ingredients to vary from the required proportions. The wines in cellar manipulation may receive an addition of refined alcohol or cognac, or the usual harmless clarifying agents. The acidity may be regulated, in the case of excessive acidity, by the addition of calcium carbonate or potassium carbonate, or the acid may be increased by the addition of cream of tartar, tartaric acid, or malic acid.

Wine may also be sulphured with arsenic-free sulphur and receive the proper manipulation for its preservation, providing that no injurious substance be added. In the manufacture of sweet wines refined sugar, saccharine material, caramel, dried raisins, and the required amount of yeast may be added for the after fermentation. In no case may anything be added in such quantities that the required propor-

tions of the various ingredients of the wine shall be altered. The addition to must or wine of material not specified, or especially of saccharin, glycerin, salicylic acid, flavoring extracts, ethereal oils, or other liquids, and of all vegetable, mineral, and aniline colors, with the exception of safflower, is expressly prohibited.

Carbonated wines can be sold only under the proper designation. The lees may be used in the manufacture of "Tresterwein" when they are extracted with sugar water for fermentation, and for "Nachwein" when extracted with water and refined alcohol or cognac.

ITALY.

DAIRY PRODUCTS.

The term "butter" must be used only to designate fatty material obtained from milk and cream by mechanical operations. The sale of abnormal or rancid butter or butter manufactured from the milk of diseased or improperly fed cows is prohibited. Butter must contain no injurious coloring matter, and must contain no added substances, such as foreign fats, flour, sirups, chalk, plaster, or soluble glass. No chemical preservatives may be added other than common salt and borax, and the latter must not be present in greater quantity than 0.2 per cent. The fat content of butter must not be less than 82 per cent. All edible fats which are to be used as butter substitutes, and all butter adulterated with foreign fat, must be sold under some such name as "margarine." Butter and other edible fats of animal or vegetable origin must be in a good state of preservation, and if of animal origin must have been prepared from a healthy animal.

Cheese must contain no substance which is not obtained from milk and cream, other than salt and harmless coloring matter.

The sale of eggs which are tainted or colored with injurious substances is forbidden.

CEREAL PRODUCTS.

Cereals and mill products must be in a good state of preservation, free from mold, weed seed, and other impurities. The addition of alum, copper sulphate, zinc sulphate, talc, chalk, plaster, and other impurities of all descriptions is forbidden.

SUGAR AND CONFECTIONS.

The word "sugar" is employed to designate the product of the sugar cane or sugar beet. It must not contain more than 5 per cent of reducing sugar. Sirups, confections, marmalades, etc., must not be fermented nor in any way deteriorated, and must not contain any other fruit product than that which is represented to be present, nor any toxic material, such as saccharin, glycerin, oxalic acid, nor such preservatives as boric acid and salicylic acid.

BEER.

Beer must be made exclusively from the malt of barley or other cereals, with the addition of hops, yeast, and water. The sale of beer which has become spoiled or deteriorated from any cause is prohibited. The sale of liqueurs and distilled liquors containing hydrocyanic acid, mineral acids, toxic metals, injurious colors, methyl alcohol, picric acid, gamboge, or medicinal drugs is prohibited.

VINEGAR.

The term "vinegar" is applied exclusively to the fermented product of wine. It must not contain less than 4 per-cent of acetic acid, and there must be no addition of coloring matter or other substances. Vinegar obtained by the acetic fermentation of beer, cider, or alcohol may be sold if properly designated "beer vinegar," etc. The sale of vinegar which has become spoiled or deteriorated on account of age is prohibited. No free acids, such as sulphuric, hydrochloric, nitric, oxalic, and tartaric, and no bisulphite must be present.

COFFEE, TEA, AND CHOCOLATE.

The sale of coffee substitutes and adulterated coffee, or coffee colored by injurious substances, is prohibited. Tea must contain no addition of any foreign substance whatever. Chocolate must receive no addition of chalk, ocher, or other mineral matter, or indigestible or injurious vegetable substances.

MEAT AND FISH.

The Italian law requires that prepared meats shall be inclosed in a wrapper on which the kind of animal from which the meat was prepared is plainly stated. It is also required that all meats, blood, etc., used in the preparation of sausage and other meat products must be in a good state of preservation. The mixture with lard of fat from any other source than swine is prohibited.

The addition of coloring matter to fish, mollusks, and crustacea in order to give stale articles a fresh appearance is prohibited.

MUNICIPAL REGULATIONS OF MILAN.

The municipal regulations of Milan prohibit the addition of coloring matter of any kind to foods and beverages which normally are colored. In confections and other foods artificially colored, the coloring matters condemned by the German law are prohibited, and all others except certain specified colors. The addition of salicylic acid to beer is also prohibited.

BOUMANIA.**GENERAL PROVISIONS.**

It is forbidden to adulterate food by the addition of foreign materials, by removing characteristic ingredients, or by any change of composition or character whereby the product is made less nutritious, less wholesome, or cheaper. The sale of unripe or decayed fruits or cereals, or of unwholesome food of any kind, is prohibited. The addition of all poisonous substances to food is prohibited, even when such poisonous substance is added in so small an amount as to be ordinarily innocuous. The addition of drugs to food is prohibited, except that materials ordinarily used as foods may be used by druggists for the purpose of preparing medicines in their ordinary forms. The use of injurious coloring materials is prohibited, both as a mixture with foods and in coloring wrappers. The use of poisonous metals, such as lead, zinc, tin containing more than 1 per cent of lead, and tin or copper containing more than 1 per cent of antimony is prohibited.

Tinned receptacles must not be coated with an alloy containing more than 1 per cent of lead or more than 0.01 per cent of arsenic. Glazed earthenware which is intended as a receptacle for food must not contain lead so combined as to be extracted by vinegar. Water used in the preparation of brandy and other alcoholic beverages must be pure, clear, and free from unwholesome ingredients. The use of injurious colors and aromatic essences in the manufacture of brandy is prohibited.

ALCOHOLIC BEVERAGES.

The alcohol used in the preparation of alcoholic beverages must contain none of the first or last distillates, must be free from acetic ether, fusel oil, and furfural. It must contain at least 95 per cent of ethyl alcohol and must answer to the following tests: 10 grams when treated with an equal weight of strong sulphuric acid remains colorless; 10 grams when treated with an equal weight of a solution of potassium hydroxid (specific gravity 1.3) must remain colorless: one volume when thoroughly mixed with five volumes of water must not be turbid or opalescent; from 20 to 25 cc when treated in a porcelain capsule with ten drops of colorless aniline or three drops of concentrated hydrochloric acid must remain colorless. The percentage of fusel oil present must not exceed 0.2 per cent of the absolute alcohol present; that of acetic ether must not exceed 0.02 per cent; that of furfural must not exceed 0.01 per cent.

Alcoholic beverages must not contain an excessive amount of aldehydes, furfural, methyl alcohol, or fusel oil. The addition of aniline derivatives and alkaloids of nitrobenzene, piperine, capsaicin, cocaine, ethyl nitrite, ethyl nitrate, ethyl ether, methyl ether, amyl ether, and the ethers of the various capronic and caprylic acids is prohibited.

Aloes, gamboge, jalap, or saccharin must not be added. The use of mineral acids and the compounds of the heavy metals such as lead, copper, and zinc is forbidden. The use of alum and of refuse animal charcoal which has not been purified is forbidden. Alcoholic beverages may be colored only with the following: Turmeric, alcoholic extract of carrots, safranin, safflower, marigold, cochineal, carmin, orseille, sandal red, Brazil wood, mallow, whortleberries, currants, raspberries, cherries, anchusa roots, indigo carmin, caramel, chlorophyl preparations, and litmus. For varying shades mixtures of the above may be employed.

The use of the following colors with alcoholic beverages is prohibited: Aniline colors of all descriptions; colors containing copper, lead, zinc, aluminum, antimony, and arsenic.

The addition of alcohol and the use of sulphurous acid for the purpose of regulating the fermentation in the preparation of distilled beverages is prohibited.

Distilled liquors must have the following alcohol content:

Ordinary brandy from 12 to 35 per cent by volume;

Plum brandy from 20 to 35 per cent by volume;

Cherry brandy from 15 to 40 per cent by volume;

Sweetened liqueurs, crèmes, rosolio, etc., from 15 to 40 per cent by volume;

Cognac from 45 to 70 per cent by volume;

Rum and arak from 45 to 70 per cent by volume.

WINE.

Wine is described as a product of the alcoholic fermentation of grape must, without addition of any description. If the source of the wine is not given it must answer the following description:

The extract content must not be less than 1.4 grams per 100 cc for white wines and 1.7 grams per 100 cc for red wines. Sweet wines and southern dessert wines must contain at least 3 grams of extract per 100 cc.

The minimum limit for ash content is one-tenth that of the extract, viz., 0.14 gram per 100 cc in white wines and 0.17 gram per 100 cc in red wines, while the ash content of southern sweet wines must not be less than 0.3 gram per 100 cc.

The percentage of alcohol must be between 6.5 and 15 per cent by volume. Southern sweet wines must contain from 8 to 20 percent of alcohol by volume and sparkling wines from 8 to 15 per cent by volume.

The glycerin content must be at least 7 parts by weight for 100 parts of alcohol. Sweet wines must contain sugar in the proportion of 30 percent for an alcohol content of 15 per cent.

The content of fixed acids must be at least 0.45 gram per 100 cc and the tartaric-acid content must be from one-fifth to one-sixth of the fixed acids present. The sodium-chlorid content must not exceed 0.005 gram per 100 cc and the sulphuric acid, calculated as potassium sulphate, must not exceed 0.2 gram per 100 cc.

Sparkling wines must not contain more than 0.05 gram potassium sulphate per 100 cc. Wines must not contain more than 0.0008 gram of free sulphurous acid or less than 0.0035 gram of phosphoric acid (P_2O_5), per 100 cc.

New wines whose fermentation is not completed must contain at least 1.55 gram extract per 100 cc, exclusive of sugar. Wines which

do not come within the standard given above or which contain more than 0.2 gram of acetic acid per 100 cc must not be sold as beverages. The sale of wine prepared from dried raisins and the addition to wine of any substance other than the product of the fresh grapes, except in the manufacture of medicinal preparations, is forbidden.

Wines made by the alcoholic fermentation of dry raisins, of mixtures of raisins with grapes, or of saccharine solutions of any sort other than pure musts, and those treated as follows are held to be adulterated:

The mixing with wines of organic or inorganic acids, or aromatic essences; the addition of glycerin, salicylic acid, boric acid, barium sulphate, strontium, aluminum and magnesium compounds, and of such substances as gum, dextrin, and resin, for the purpose of increasing the extract content.

The addition of the following substances to wine is especially prohibited:

Compounds of aluminum, magnesium, strontium, barium; the sulphites and sulphates of calcium and sodium; free mineral acids, compounds of lead, zinc, tin, copper, and arsenic; mineral colors and aniline colors of all descriptions; glucose, molasses, or crude sugar; crude alcohol; glycerin; boric acid and salicylic acid and their compounds; artificial essences and saccharin; pokeweed berries and juice of the same.

The following methods of treatment are permitted:

The blending of pure wines; neutralization of excessive acidity with calcium carbonate; filtration through pure vegetable charcoal; the use of clarifying agents, such as gelatin, albumin, isinglass, and kaolin; the sulphuring of empty casks by means of pure arsenic-free sulphur; the addition of pure refined spirits to sweet wine in such quantities that the limits given above shall be retained; the addition to sweet wine of refined sugar or glucose in such quantities that the limits given above shall be retained; the washing of casks with refined alcohol before they are filled, provided that the volume of the alcohol so employed does not exceed one-half per cent the volume of the wine manufactured; the addition of pure carbon dioxid in the preparation of carbonated wines; the plastering of red wines, provided that the product does not contain more than 0.2 gram potassium sulphate per 100 cc; the addition of must; and the pasteurizing of wines.

The manipulations mentioned above, however, must not be carried to such an extent that the composition of the wine will be rendered different from the required standards. All manipulations which change the character of the wine and serve to adulterate it are forbidden.

BEER.

Beer must be prepared exclusively from malted barley, hops, yeast, and water, by alcoholic fermentation. If a portion of the barley is replaced by any other material the product must be designated by a name indicating that fact.

Beer may vary in color from dark yellow to clear brown; it must have a characteristic odor and taste and be charged with carbon dioxid. It must contain from 2.5 to 6 per cent of alcohol, from 3.5 to 8 per

cent of extract, from 2.5 to 4.9 per cent of dextrin, and from 0.5 to 3 per cent of maltose.

The original wort from which it was prepared must have had an extract content of at least 9 per cent and the degree of fermentation must be at least 48 per cent. The total acid content must not exceed 0.35 per cent. The acetic-acid content must not exceed 0.06 per cent; the sulphuric-acid content must not exceed 0.2 per cent; the glycerin content must not exceed 0.04 per cent; the ash content must not exceed 0.3 per cent.

The addition to beer of alkaline carbonate for the purpose of neutralizing excessive acidity, of calcium or sodium sulphites, salicylic and boric acids, and similar compounds, is prohibited.

No coloring matter must be added except caramel and that naturally extracted from malt. The addition of saccharin, aromatic essences and extracts, hop substitutes, such as picric acid and its compounds, aloes, and all injurious substances in general, is prohibited.

VINEGAR.

Vinegar is defined as the product of the oxidation of refined alcohol or the fermentation of wine, beer, and the juices of various fruits, or as the mixture of pure concentrated acetic acid with pure water. It must be a clear liquid, free from suspended matter, and may have the color of the material from which it was prepared, varying from bright yellow to red, or it may be colored with pure caramel.

Vinegar must not contain more than 8 per cent of acetic acid nor less than 4 per cent. The manufacture of vinegar from crude alcohol is prohibited.

The addition of the following substances to vinegar is prohibited:

Sodium chlorid; mineral acids; bisulphites; poisonous metals and similar substances, such as lead, copper, zinc, arsenic, and antimony; black pepper, cayenne pepper, or other substances for the purpose of giving a sharp or bitter taste; products of the destructive distillation of wood (acetic acid excepted), such as methyl alcohol, acetone, etc.

CHEESE.

Cheese must contain nothing but the normal casein, proteids, butter fat, milk sugar, and mineral bodies obtained in its preparation from pure milk. Its reaction must be neutral or acid. The sale of cheese manufactured from milk of diseased or improperly fed cows is prohibited. The addition to cheese of any foreign substance, such as alkali, for the purpose of neutralization, foreign animal or vegetable fat, starch, and flour is prohibited. The addition of artificial essences for the purpose of giving a ripe taste to green cheese is prohibited. The addition of injurious colors and of artificial colors in general and of chemical preservatives is prohibited.

BUTTER.

Butter is defined as the product of milk or cream of the cow or buffalo. It is white or yellow in color, of uniform consistency, and contains a small amount of casein, milk sugar, lactic acid, unorganized bodies, etc. Butter must contain at least 82 per cent of fat, and the sale of butter prepared from adulterated milk or the milk of diseased or improperly fed cows is prohibited.

Butter must have the normal taste and odor and be free from rancidity, bitterness, fungi, dirt, etc. The addition of injurious artificial, mineral, or vegetable colors is prohibited. The content of sodium chlorid must not exceed 8 per cent, and the addition of foreign materials, such as starch, flour, and foreign fats is prohibited.

LARD AND TALLOW.

The addition to lard and tallow of foreign materials, such as foreign fat, alum, calcium carbonate, gypsum, sodium carbonate, starch, flour, and the sale of rancid and deteriorated fat are forbidden.

VEGETABLE OILS.

The sale as foods of vegetable oils obtained with the assistance of heat, hot water, steam, or by means of heating the press, or separated by means of such solvents as carbon disulphid, petroleum ether, and benzene, is prohibited. The admixture with olive oil of any other oil, such as sesame, peanut, rape-seed, sunflower, cotton-seed, mineral, and animal oils, is prohibited.

The sale as food of the oil prepared from decayed or fermented olives is prohibited. Table oil must be free from rancidity, and the total acid content must not exceed 1.66 per cent. The following are the requirements as to specific gravity of the oils mentioned:

Rape-seed oil, 0.914 to 0.917; olive oil, 0.915 to 0.918; oleo oil, 0.915 to 0.922; cotton-seed oil, 0.922 to 0.931; sesame oil, 0.923 to 0.924; poppy oil, 0.924 to 0.937; nut oil, 0.925 to 0.927; linseed oil, 0.932 to 0.937.

CEREALS AND FLOUR.

Cereals which are unripe, decayed, or decomposed, covered with fungus, affected by vegetable or animal parasites, or mixed with other varieties of cereals, can not be sold for human food, nor shall flour or meal prepared from the above be sold as food. The sale of a mixture of wheat, rye, barley, or maize flour with leguminous flour or other foreign material, except when properly designated, is forbidden. The ash of cereals and of the flour prepared from the same must have an alkaline reaction. The sale of flour which has deteriorated in any way or which contains more than 18 per cent of water is forbidden. The

sale of wheat flour which contains a mixture of the flour of any other substances, such as rye or barley, is forbidden. The addition of mineral substances, such as calcium carbonate and gypsum, is forbidden.

COFFEE, TEA, COCOA, AND CHOCOLATE.

The adulteration of coffee with any foreign substances, or of coffee from which any ingredient has been extracted, is prohibited. The mixture with coffee of artificial coffee beans or the sale of artificially colored coffee, or of coffee treated with any oil, roasted after the addition of sugar, or which has spoiled or deteriorated in any way, is prohibited. The sale of coffee substitutes may be permitted under some appropriate designation, such as "chicory," "barley coffee," and "fig coffee." These substitutes, however, must be free from injurious substances, and must not contain more than 5 per cent of ash or more than 14 per cent of moisture.

The term "cocoa" must be applied exclusively to the product of the cocoa bean. Cocoa powder, from which a portion of the fat has been removed, may be sold in packages which are so designated as to inform the purchaser of their nature, provided that they shall contain at least 22 per cent of cocoa butter. The term "soluble cocoa" may be applied to the same product when alkalized, provided that it contain not more than 2 per cent of potassium or sodium carbonate. The addition of artificial coloring matter, of foreign starch or fat, or foreign substances of any description, and the sale of cocoa so adulterated are prohibited. The sale of cocoa butter containing an excessive amount of cocoa shells is forbidden.

The term "chocolate" is applied to the product of the cocoa bean which has been mixed with sugar, with or without the addition of such flavoring materials as vanilla, cinnamon, etc. The sale of tea which contains the leaf of any other plant, which contains any foreign substance, or whose nature has been changed by extraction, is forbidden.

SUGAR, HONEY, CONFECTIONS, ETC.

It is forbidden to sell confections in receptacles of poisonous metals, or in receptacles which are tinned or coated with an alloy containing more than 1 per cent of lead, or which have in their composition any metal or glaze which is attacked by the confection or the sirup containing it.

Honey is defined as being the natural product of the bee, and containing from 78 to 92 per cent of invert sugar; from 1 to 3 per cent of cane sugar; from 1 to 2 per cent of proteids; from 0.12 to 0.44 per cent of ash; from 10 to 16.5 per cent of water.

Glucose which is intended for use in manufacturing confections must be commercially pure, and must contain from 88 to 95 per cent of

glucose; from 5 to 12 per cent of water; not more than 0.5 per cent of ash, and must contain no unfermentable matter, preservatives, or other foreign material.

Sugar must not be mixed with grape sugar, ultramarine, or indigo blue to a greater extent than 0.2 per cent; nor with gypsum, barites, kaolin, flour, saccharin, dulcin, or other similar impurities.

Confections must not be mixed with dulcin, with flour, mineral substances, or with those coloring matters which are prohibited in the general regulations regarding artificial colors. They must not be ornamented with flowers, leaves, etc., which contain injurious coloring material nor inclosed in receptacles or wrappers colored with injurious compounds.

The following colors are permitted:

White.—Ground cereal and potato flour.

Yellow.—Carrot, safranin, logwood, marigold.

Red.—Sorrel, madder, cochineal, carmine, red sandalwood.

Green.—Chlorophyl, spinach, and the mixtures of yellow and blue colors that are themselves permissible.

Blue.—Litmus and indigo carmine.

Violet.—Mixtures of blue and red colors that are permissible.

Brown.—Caramel, cocoa beans, licorice.

Black.—Purified bister.

The use of all colors which contain antimony, arsenic, barium compounds, cadmium, chromium, tin, copper, mercury, lead, uranium, zinc, picric acid, and aniline derivatives is prohibited. The use of gilded or silvered bronze or tinfoil which contains tin, lead, zinc, nickel, antimony, or aluminum, is forbidden.

SAUSAGE.

Sausage and other forms of preserved meat must be free from liver, kidneys, lungs, and viscera and consist entirely of the flesh of edible domestic animals, game, and birds put up while fresh.

The preparation of canned and preserved meat products from unsound or unwholesome meat or from the flesh of diseased animals or of other animals than those ordinarily used as food is forbidden. The preparation of canned and preserved fish which has been killed by means of poisonous substances, the manufacture of food products from the same, and the preserving of fish products in oil that is rancid or for any reason not edible, is prohibited. The use of commercial preservatives, such as salicylic acid or boric acid, tannin, alum, sulphurous acid, potassium chlorid, sulphites, glycerin, wood vinegar, impure vinegar, fusel oil, and other unwholesome substances for the preservation of meat or vegetables, is prohibited.

The coloration of preserved vegetables and fruits with mineral and aniline colors is forbidden, as is also the coloration of sausages and preserved meats.

TUNIS.**WINE**

Wine is defined as the product of the fermentation of fresh grapes. The product obtained by the fermentation with water of the residuum of fresh grapes (after expression), whether with or without the addition of sugar, and the mixture of this product with wine in whatever proportion, can not be sold unless properly designated on all casks and receptacles and on all books, invoices, bills of lading, etc.

The product of the fermentation with water of dried raisins can not be sold except under the name of raisin wine. The same holds true in the case of mixtures of raisin wine with true wine, whatever may be the proportion.

Any addition of the following substances to wine is considered an adulteration:

1. Any coloring matter whatever.
2. Sulphuric, nitric, hydrochloric, salicylic, boric, or other analogous acids.
3. More than 0.1 gram of sodium chlorid per 100 cc.
4. The product of the fermentation or distillation of figs, locust pods, pimpernel flowers, bellflower, rice, barley, and other materials containing sugar.

The casks or receptacles in which plastered wine is placed must be marked with large letters indicating the same. The books, bills of lading, invoices, etc., must contain the same information. The content of potassium sulphate must not exceed 0.2 gram per 100 cc in any case.

SWITZERLAND.**GENERAL PROVISIONS.**

Beer must be made exclusively of cereals, either fresh or malted, hops, yeast, and water, by means of mashing and alcohol fermentation. All beer when sold must be clear and not rendered turbid by yeast, bacteria, acetic fermentation, or in any other manner. In the preparation of beer the following are prohibited: Malt and hop substitutes, all coloring matter except that of malt, preservatives such as salicylic acid and boric acid, and saccharin; and the addition of alkalies for the purpose of correcting excessive acidity.

Sulphurous acid must not be present in greater quantities than 0.0014 gram per 100 cc. Beer shall contain more extract than alcohol, and the extract content of the original wort must not be less than 12 per cent. The extract content of the wort is obtained by adding together the extract content of the beer and twice its alcohol content. The degree of fermentation must not be less than 48 per cent, or if less than that amount the reducing substances present, calculated as maltose, must not exceed 3 per cent. The degree of fermentation of the original wort is obtained by the formula $100 \left(1 - \frac{\text{Extract}}{x}\right)$, in which x is the extract of the original wort. The foregoing standards do not apply to the so-called double beers, such as bock beer and salvator beer.

CANTON OF BERNE.

The addition to meat of boric acid, salicylic acid, formalin, sulphites, and all other chemical preservatives, except sodium chlorid and potassium nitrate, is prohibited.

CANTON OF GRAUBÜNDEN.

Meat.—Meat and meat products must have an appetizing appearance, a normal odor and taste, and must not contain any harmful impurities, such as metallic poison, drugs, ptomaines, parasites, etc. The addition of preservatives, with the exception of salt and saltpeter, is forbidden. Sausage must not contain more than 70 per cent of water, and bread crumbs, etc., shall not be added.

Butter and butter fats.—The term “butter” shall be used only with reference to the product of fresh milk and cream, either in the fresh state or the melted fat of the same. The fat content of fresh butter must be at least 82 per cent. Butter shall not form a part of the name of any product containing fat from other sources than pure milk. The sale as food of fat which has become rancid, or has in any way deteriorated, is forbidden.

Flour and meal.—All flour and meal must be so marked as to indicate the grain from which it is prepared. It must be free from mineral impurities, fungi, and weed seeds.

Canned vegetables.—Canned vegetables must not contain over 10 mg of copper salts per 100 grams of fresh food.

Honey.—The term “honey” must be confined to the unmixed product of the bee. It shall not be used either by itself or in combination with other syllables or words to designate adulterated honey or honey substitutes. Such adulterated honey and honey substitutes must be inclosed in receptacles bearing labels on which the term “sirup” appears in distinct type. Also all invoices and shipping receipts of such adulterated goods must be marked with the word “sirup.”

Beer.—The term “beer” must be used only in reference to beer made exclusively from malted barley, hops, yeast, and water, by means of mashing and alcoholic fermentation. In case part of the barley is replaced by some other cereal the same must be plainly stated on the label. Malt and hop substitutes are prohibited. Beer must be clear, wholesome, and free from yeast; the original wort from which it was prepared must have had an extract content of at least 12 per cent. Beers whose degree of fermentation is less than 48 per cent must not contain over 3 per cent of maltose. These regulations do not apply to the so-called double beers, such as bock beer and salvator beer.

The ash content must not exceed 0.3 per cent, and the sulphurous acid content must not exceed 0.004 gram per 100 grams. The presence of boric and salicylic acids in beers is forbidden.

Wines.—The term “wine” shall be applied exclusively to the beverage prepared from the juice of fresh grapes without the addition of

any foreign substances. Wines whose volume has been increased by the addition of any foreign substances, or which are prepared from any other fruits than wine grapes, shall be so labeled as to indicate that fact. The sale of wines which have become sour or deteriorated in any way is forbidden. Wine whose sulphurous acid content, calculated as potassium sulphate, exceeds 0.1 gram per 100 cc shall be designated as "plastered;" if it exceed 0.2 gram per 100 cc it shall be designated as "excessively plastered." Wine must not contain more than 0.002 gram of free sulphurous acid or 0.018 gram of combined sulphurous acid per liter. A higher content of sulphurous acid is considered unwholesome. The addition of preservatives, such as boric and salicylic acids, is prohibited.

The alcohol content of medicinal wines shall not be less than 13 or more than 20 per cent by volume. They shall not contain less than 0.2 gram of ash or more than 0.2 gram of acetic acid, 0.2 gram of potassium sulphate, or 0.002 gram of total sulphurous acid, per 100 cc.

Brandy and liqueurs.—The presence of poisonous metallic compounds, such as copper or lead, and of free mineral acids is prohibited. The alcohol of brandy must not contain more than 0.2 per cent of fusel oil.

Vinegar.—Vinegar must not contain less than 3 per cent of anhydrous acetic acid. The presence of free mineral acid is prohibited. The sale as wine vinegar of vinegar made from any other substance than wine is prohibited.

Receptacles.—All receptacles and wrappers for food must be free from harmful substances. The use of lead foil or of tin foil containing lead is especially prohibited.

Coloring matter.—The addition of artificial colors to meat or meat products, wines and similar beverages, beer, distilled and wood vinegar, coffee, tea, chocolate, condiments, fruit juices, fruit lemonades, and bakers' products supposed to contain eggs is prohibited. The addition to foods of artificial colors which contain harmful substances, such as the following, is prohibited: Antimony, arsenic, barium, lead, cadmium, copper (except that copper salts may be added to canned vegetables in amounts not exceeding 10 mg per 100 grams), chromium, mercury, zinc, and tin. The use of gamboge and injurious aniline colors is also prohibited.

CANTON OF LUCERNE.

The adulteration of foods by extracting from, adding to, or changing in any way that will decrease the value, is prohibited. Only substances may be added which are necessary in preparation, transportation, or preservation, and which do not increase weight or injure quality. The name must not misrepresent place and manner of pro-

duction and manufacture. Food that is unripe, unsound, or for any reason unfit for food must not be sold. Standards for cacao, etc., vinegar, honey, coffee, flour (wheat or rye), milk, must, tea, drinking water, and wine are given.

Beer.—Beer must contain more extract than alcohol, and must be prepared from wort containing not less than 12 per cent of solids. The glycerine content must not exceed 0.4 per cent. Not more than 3 cc of normal alkali shall be required for the neutralization of total acids in 100 grams of beer from which carbon dioxid has been removed by shaking. Not more than 1 cc of normal soda solution shall be required for the neutralization of volatile acids. The content of sulphurous acid must not exceed 0.0014 grams per 100 cc. At least 48 per cent of the original extract of the wort must have been fermented. These standards do not apply to the so-called double beers (bock beer and salvator). Beer which is turbid because of the presence of yeast or bacteria shall not be sold. The addition of unwholesome preservatives, such as calcium bisulphite, and of alkaline substances, such as potash and soda, for the purpose of correcting excessive acidity, is prohibited. The use of so-called beer color (caramel, etc.) is prohibited.

Brandy.—The addition of 15 cc of brandy to an equal volume of distilled water and a few drops of a solution of potassium ferrocyanide should not produce a red-brown precipitate, and the addition of an excess of ammonia must not cause a marked blue color (presence of copper). Brandy must contain no trace of lead or free inorganic acid. The content of fusel oil must not be sufficient to produce a turbidity when the brandy is mixed with 3 volumes of water, or to allow the globules of fusel oil to separate when 1 volume of brandy is mixed with 1 volume of ether and 2 volumes of water. Brandy must contain at least 46 per cent of alcohol by volume, except old brandy, whose alcoholic content may be as low as 44 per cent by volume.

Butter.—Butter must contain no fat except that prepared from milk. Fresh butter must contain at least 82 per cent of butter fat. The word "butter" must not be used, even in combination with other words, to designate articles containing fat from other sources than milk. For instance, such terms as "Kunstbutter" (artificial butter) and "Kübelbutter" (tub butter) are not permitted for articles containing fat from other sources than milk.

Cocoa and cocoa preparations.—Foreign additions to cocoa, such as flour, starch, and spices, and even sugar, must be stated on the outside of each package. The addition of alkaline carbonate not to exceed 2 per cent may be made to the hulled cocoa powder for the purpose of rendering it soluble.

Vinegar.—Vinegar must contain at least 4 per cent of acetic acid. The addition of other acids, of pungent or aromatic substances, and

of aniline colors, is forbidden. Vinegar made by diluting so-called vinegar essence must be designated as "essence vinegar."

Honey.—Only the unsophisticated product of bees can be designated as honey. The word honey can not be used in combination with other words to designate any article other than pure bee honey; for instance, such terms as "table honey" and "Swiss honey" are permitted only for pure honey. All honey substitutes, such as commercial glucose, molasses, and all mixtures of the same with honey, must be so labeled as to inform the purchaser of the exact origin and composition of the contents of the package.

Coffee.—Coffee must not contain more than 4 per cent of ash, except Mocha coffee, which may contain 8 per cent. The use of artificial colors in coffee and the fraudulent mixture of adulterants is prohibited.

Flour.—The ash content shall not exceed 2 per cent for rye flour or $\frac{1}{2}$ per cent for wheat flour. The water content of wheat and rye flour must not exceed 15 per cent. That of other varieties must not exceed 18 per cent.

Cider.—Fermented cider shall not contain less than 3 per cent of alcohol by volume, 1.5 per cent of extract, or 0.15 per cent of ash.

Wine.—Wine must not contain less than 6.24 per cent of alcohol by volume. The extract content must not be less than 1.5 per cent for red wine or less than 1.4 per cent in white wine. The ash content of wine must be at least 0.15 per cent. By ash content is meant carbonated ash. The percentage of volatile acid expressed as acetic acid must not exceed 0.2 per cent. The sulphuric acid (combined) content, expressed in terms of potassium sulphate, must not exceed 0.2 per cent for medicinal wine and must not exceed 0.1 per cent in dry wines. Wines which contain over 0.008 grams of sulphurous acid per 100 cc must not be sold for consumption without previous cellar manipulation. These restrictions are not applied to sweet or sparkling wines, and apply only to medicinal wines when the latter are specified. The addition of artificial colors is prohibited.

Sausage.—Sausage and any similar preparations must have been prepared exclusively from sound, fresh meat, fat, liver, and blood, with the customary addition of spices. All other additions, such as starchy materials, are considered as adulterants.

CANTON OF ST. GALLS.

All materials intended for food must be so labeled as to inform the purchaser as to their exact nature. The sale of adulterated or unwholesome foods is prohibited. The usual regulations concerning the sale of butter, oleomargarine, lard, etc., are enforced. The so-called St. Gall's sausage (*Kalbfleischbratwurst*) must not contain more than 2 per cent of added starch or flour. Horse-meat sausage must not contain more than 3 per cent of starch or flour. The sale of cider and

similar preparations made from green fruit is forbidden. The sale of all foods contaminated with poisonous metals, such as zinc and lead, or inclosed in receptacles lined with zinc or lead alloys, is forbidden.

Wine.—Medicinal wines must not contain more than 0.002 gram of total sulphurous acid, more than 0.2 gram of sulphuric acid expressed in terms of potassium sulphate, or more than 0.2 gram of acetic acid per 100 cc. White wines must not contain more than 0.002 gram of free sulphurous acid or more than 0.018 gram of combined sulphurous acid per 100 cc. Wine whose sulphurous-acid content exceeds this limit is considered unwholesome and must be subjected to cellar manipulation before it is sold as a beverage. Wine which has become sour or turbid owing to the acetic-acid fermentation, or which has deteriorated in any other way, must not be sold as a beverage.

Beer.—The addition of alkaline substances for the purpose of neutralizing the excessive acidity of beer is prohibited. The addition to beer of salicylic or boric acid is prohibited. The sulphurous-acid content of beer must not exceed 0.0014 gram per 100 cc. New beer or beer which has become turbid by reason of the presence of yeast cells or bacteria must not be sold as a beverage.

CANTON OF ZURICH.

The addition of all preservatives to meat, except salt and saltpeter, is prohibited.

Coffee substitutes shall be named according to the chief ingredient when possible, as "chicory coffee," "malt coffee," etc. When the product is a mixture of a number of substances, it shall be designated as "Kaffee-surrogate," and either the chief constituents shall be printed on the label or all of the constituents communicated to the board of health.

EXHIBIT NO. 5.

[Senate Report No. 8, Fifty-seventh Congress, first session.]

DIGEST

OF THE

PURE FOOD AND DRUG LAWS OF THE UNITED STATES AND FOREIGN COUNTRIES,

TOGETHER WITH

COURT DECISIONS AFFECTING SAME.

**PREPARED UNDER THE DIRECTION OF THE SENATE COMMITTEE ON MANUFACTURES,
WILLIAM E. MASON, Chairman.**



INTRODUCTION.

The Committee on Manufactures, which was directed by resolution of the Senate under date of February 19, 1901, to prepare a compilation of the pure food and drug law of the United States and foreign countries, beg leave to report the following digest, which is expected to be a convenience to legislators in considering this most important question of food adulteration.

It may not be inappropriate to call attention to the fact that since the Committee on Manufactures investigated the question of food products the subject has become a vital one in a large number of the States, the legislatures of which have passed laws prohibiting the adulteration of food and drugs. Indeed, it may be stated that to-day every State in the Union has some general or specific law upon the question of food and drug adulteration.

The bill recommended by this committee, known as the "flour bill," has been of inestimable value, and the committee can safely state that it has practically ended the adulteration of American flour which, at the time of the passage of the bill, was a most common practice. Thousands of barrels of mixed flour were confiscated during the first year of the enforcement of the act. Every mill engaged in grinding white earth as a substitute for flour has closed its business. The health of the people has been protected thereby; the honest manufacturer has been relieved of the unfair competition which he had to meet with those who adulterated their flour. The reputation of American flour increased at home and abroad. The export of American flour the first twelve months after the passage of the bill increased from 10,000,000 to 15,000,000 barrels, which, in the opinion of the committee, as shown by correspondence with the leading exporters, was largely due to the fact that every barrel of American flour is guaranteed by the Government to be pure.

This instance is cited to encourage further proper pure-food legislation in accordance with bills reported by this committee. The committee is of the opinion that there should be national legislation upon this subject; as that would control interstate commerce in adulterated foods; it is the only way to guarantee uniformity of legislation, and will substantially help our American products in foreign markets by giving it the Government guaranty, which is largely demanded by our customers abroad.

Wm. E. MASON, *Chairman.*

DIGEST OF PURE FOOD AND DRUG LAWS OF THE UNITED STATES AND OF FOREIGN COUNTRIES.

LAWS OF UNITED STATES.

Alabama.—The sale and exposing for sale of tainted or unwholesome meat, fish, and the flesh of diseased animals and animals dying otherwise than by slaughter are prohibited.

Bread, biscuit, and crackers must not be sold without the name or initials of the baker legibly marked on each article, and the sale of bread prepared from sour or unwholesome flour is prohibited.

The mixing of foreign matter with sugar, sirup, or molasses, lard or butter, or other articles of food so as to deteriorate or change the quality thereof, and the sale and exposure for sale of such adulterated goods are prohibited.

The manufacture and sale of uncolored oleomargarine stamped with its true name are permitted, but the manufacture and sale as well as possession with intent to sell or to serve to hotels and boarding-house guests of colored artificial butter and similar products are prohibited.

The manufacture and exposure for sale of liquors mixed with any poisonous or unwholesome drugs or oil are prohibited.

The manufacture of candies and confections containing mineral impurities, poisonous colors, flavors, extracts, or other ingredients injurious to health, are prohibited. It is also prohibited to knowingly sell, give away, or keep for sale goods of this nature.

Violators of that portion of this act relating to oleomargarine, alcoholic liquors, and the branding of bread are punishable by fine. For violations of other provisions the fine may be supplemented by imprisonment in the county jail or sentence to hard labor. (Code of Alabama, 1896, Vol. II, secs. 5321–5328.)

Arizona.—The sale of tainted, decayed, spoiled, or otherwise unwholesome food, drink, or medicine, with intent to permit the same to be eaten or drunk, is prohibited.

The adulteration and dilution, for sale as pure, of food, drink, drug, medicine, spirituous and malt liquor and wine, and the sale and offer for sale as pure of such adulterated or diluted food, drink, drug, medicine, spirituous and malt liquor and wine, are prohibited by the penal code. (Secs. 606, 607.)

Arkansas.—The act of April 13, 1893, prohibits the sale of deteriorated or diseased or decayed meat, fish, fowls, vegetable produce, or provisions of any kind, without making the same fully known to the purchaser. The sale for food of the flesh of any animal dying otherwise than by slaughter, or the flesh of any animal slaughtered when diseased, and of the meat of any calf which was killed before it had

attained the age of six weeks, are also prohibited. Violators of the law are punished by a fine not exceeding \$500, or by imprisonment for not exceeding six months.

The act of March 31, 1885, provides that butter substitutes and adulterated butter shall have the words "adulterated butter," "oleo-margarine," or "butterine," or such other name as shall properly describe it, marked in letters of plain roman type not less than one inch in length, upon the top and side of every package. Retail dealers are also required to label the outside wrapper of each package with a similar description, in printed letters of plain roman type, not less than 1½ inches in length. Violators of the act are punishable by a fine of not less than \$50 or not more than \$500. The same act requires that hotel and restaurant or boarding house keepers who serve butter substitutes or adulterated butter shall have the dish or plate holding the same so marked as to indicate that fact. Violators of this provision are fined not less than \$5 and not more than \$100. The term "butter" is designated as "the product usually known by that name which is manufactured exclusively from milk and cream."

California.—The act of March 26, 1895, prohibits the manufacture and sale of adulterated food and drugs. The terms "food" and "drugs" are defined as well as what the adulteration of each shall consist of. The act is patterned after the New York law. It is provided that the provisions of the act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if each and every package sold or offered for sale be distinctly labeled as mixtures or compounds, with the name and percentage of each ingredient therein, and are not injurious to health. Dealers and manufacturers are required to furnish samples, on application for the same, with the tender of the value of the sample. Violators of the act are punishable by fine or imprisonment, or both.

The act of March 4, 1897, regulates the manufacture and sale of imitation butter and similar compounds. The manufacture of skim-milk cheese is permitted. The manufacture and sale of uncolored butter substitutes and cheese substitutes are permitted, but the same must be distinctly labeled "Substitute for butter" or "Substitute for cheese," as the case may be, in prescribed type, and also with the name and address of the manufacturer, the name of the place where manufactured, and the names and actual percentage of the various ingredients used in their manufacture. Common carriers are prohibited from knowingly handling butter and cheese substitutes which are not properly marked. Hotels, boarding houses, and places of public entertainment, which use butter substitutes or cheese substitutes, are required to notify their patrons of the same, and the use of these articles for State institutions is prohibited. The violators of this act are punishable by fine or imprisonment, or both.

The act of March 26, 1895, prohibits the sale or offer for sale of imitation honey, both comb and strained. Violators of the act are punishable by fine or imprisonment, or both.

Colorado.—The laws of 1887 require that adulterated articles of food and drink shall be so marked as to give the purchaser correct information regarding their character. The sale of milk to creameries is also regulated.

Chapter 19 of the laws of 1895 prohibit the manufacture and sale of oleaginous materials which are intended to imitate or take the place of

butter and cheese. The manufacture of uncolored oleomargarine and of skim and imitation milk cheese are permitted when properly marked. All cheese factories are required to mark their product "full cream cheese" or "imitation," according to its character, with brands and stencils which are furnished by the State's dairy commissioner. Standards of composition are given. Violators of the act are subject to fine or imprisonment.

Connecticut.—The act of June 26, 1895, as amended by the act of March 23, 1899, prohibits the manufacture and sale of adulterated or deteriorated food. The State experiment station is empowered to fix standards of purity, quality, or strength when such standards are not specified by law. The prohibition includes all articles intended as food for man, horses, or cattle. Any one knowingly violating the provisions of the act is subject to a fine of not more than \$500 or imprisonment for not more than one year.

The act of May 18, 1893, regulates the manufacture and sale of imitation butter. It is provided that any article resembling butter in appearance and not made wholly (salt and coloring matter excepted) from the milk of cows shall be imitation butter within the meaning of the act. It is further provided that the words "butter," "dairy," or "creamery" shall form neither the whole nor a part of the name, nor be used in the description of any imitation butter.

The coloring of imitation butter to imitate butter is prohibited. The sale of uncolored imitation butter is permitted.

The act also provides that a sign shall be maintained in plain sight on all premises where imitation butter, or food containing it, is sold, and on all wagons selling or delivering the same.

It is also provided that hotels, boarding houses, and restaurants which serve imitation butter or food containing it shall maintain a sign in plain sight of all guests.

The act requires that the dairy commissioner and his deputy shall have full access, at all reasonable hours, to all places where it is suspected that imitation butter is made, sold, used, kept, or stored in transit, and that he shall receive samples of suspected articles on tender of the market price of good butter.

Agents of railroad and express companies are required, on request, to give to the commissioner, or his deputy, details regarding any consignment of imitation butter. The act describes in detail the signs which shall be used in various cases and provides that such signs shall be furnished, at the actual cost, by the dairy commissioner and placed under his supervision. Boarding-house keepers serving imitation butter, or food containing it, in violation of this act, are subject to a fine, for the first offense, of \$25, or imprisonment of not exceeding thirty days, or both. Other violators of the act are subject to a fine of not more than \$100, or imprisonment of not more than sixty days, or both, for the first offense. In both cases, the fine and imprisonment may be doubled for each subsequent offense. The act further provides that evidence of any violation shall be *prima facie* evidence of willful violation with knowledge.

The act of May 5, 1897, provides that when tub butter is sold in the form of bricks, pats, or balls, such packages shall be labeled as prescribed in the act. Violators of the act are subject to a fine of not more than \$100.

The act of June 21, 1889, specifies the manner in which the manu-

facturers of vinegar must brand each package. The true name, such as cider vinegar, wine vinegar, malt vinegar, or wood acid vinegar, must always be employed. The act does not apply to retail sale at the place of manufacture in quantities of less than 5 gallons and in open packages. The addition of any drug or any hurtful or foreign substance or coloring matter or acid to vinegar is prohibited. Standards for cider vinegar are included in the law. Violators of the act are punishable by fine and imprisonment. Evidence of violation of the act is *prima facie* evidence of willful violation with knowledge.

Special regulations were also made at the same date regulating the adulteration of molasses. The adulteration of molasses with salts of tin, terra alba, glucose, dextrose, starch sugar, corn syrup, or other preparations of or from starch is prohibited.

Delaware.—The manufacture and sale of oleaginous substances resembling butter and cheese and the manufacture and sale of adulterated butter and cheese are prohibited. Violators of the law are punishable by a fine. (Rev. Stat., 1895, p. 544.)

The adulteration of drugs and medicines is a misdemeanor.

District of Columbia.—A general law has been enacted prohibiting the sale of food and drugs which have been adulterated with deleterious substances, and requiring that the admixture of permissible substances shall be stated on the label. (Rev. Stat. U. S., 1898, chap. 25, p. 246.)

Special laws prohibiting the sale of adulterated milk and providing that skim milk and imitation or adulterated butter and cheese may be sold only under prescribed conditions have been enacted. (Rev. Stat. U. S., 1895, p. 401.)

The manufacture and sale of candy adulterated with injurious substances are also prohibited. (Rev. Stat. U. S., 1898, chap. 241, p. 398.)

Florida.—The adulteration, for the purpose of sale, of bread and other substances intended for food, and beverages, and the sale, with the knowledge of their true character, of diseased, unwholesome, and adulterated articles of food and drink, without informing the purchaser of the character of the goods, are prohibited. The intentional sale as butter of spurious preparations purporting to be butter, and the serving of the same by hotel and boarding-house keepers without giving notice to guests at the table are prohibited. Violators of the act are subject to fine or imprisonment. (Rev. Stat., 1892, 2659-2664.)

Georgia.—Article 16 of the Code of Georgia for 1895 regulates the sale of adulterated food and drink. The sale of the flesh of diseased animals and of other unwholesome foods is prohibited. The sale of unwholesome bread, drink, or pernicious and adulterated liquor, with knowledge, is prohibited.

The intentional sale of adulterated food which is not so labeled as to give the purchaser correct information regarding its nature, is prohibited, and dealers are also required to inform customers of the nature of the goods they buy at the time of the sale.

The sale of unclean, impure, or adulterated milk, or milk from diseased animals is prohibited. Skim milk may be sold as such, but not as whole milk.

Imitation butter and cheese are carefully defined. The manufacture of imitation butter and cheese is permitted when no coloring matter is used, but the coloring of such articles to imitate butter and cheese is prohibited. The violation of this act is made a misdemeanor.

Article 17, code of Georgia, 1895, prohibits the manufacture and sale of adulterated drugs, medicines, and pharmaceutical preparations. Adulteration in these cases is carefully defined. The violation of the act is considered a misdemeanor.

Idaho.—The adulteration of any article of food, with the intent to sell the same as unadulterated, is prohibited by the penal code of the Revised Statutes of Idaho, section 6918.

Section 6917 of the same code regulates the manufacture and sale of imitation and adulterated butter. The manufacture and sale of oleo-margarine, butterine, and adulterated butter are permitted only in packages which are branded in the prescribed manner. The sale of these articles as butter, or without being marked as prescribed in the act, is considered a misdemeanor.

Illinois.—The act of May 25, 1877, provides that no barley, wheat, or other grain shall be subjected to fumigation, by sulphur or other material, to any chemical or coloring process whereby the color, quality, or germ of such grain is affected. The sale of grain so treated is also prohibited. The violators of the act are subject to fine and imprisonment.

The act of May 29, 1879, prohibits the adulteration of milk and the sale of adulterated or unwholesome milk. The keeping of diseased cows for milk supply is also prohibited, and a method of marking is prescribed for cans, etc., of milk dealers. The sale of skim milk is permitted under its own name and when conspicuously marked with words "skim milk."

Violators of this act are subject to fine or imprisonment, or both.

The act of May 31, 1879, requires that artificial and adulterated butter and cheese shall be so marked as to inform the purchaser of their true character. Anyone knowingly violating the act is subject to fine or imprisonment, or both.

The act of June 1, 1881, relates to the manufacture and sale of butter and cheese. The act prohibits the manufacture, sale, and giving away of imitation and adulterated butter and cheese for the pure article. The violators of the act are subject to fine.

The act of June 1, 1881, prohibits the adulteration of foods, drugs, and medicines, and the sale of such adulterated articles, except under such prescribed conditions as shall inform the purchaser of their true character. Section 6 of this act, which provided for the exemption of a person proving a lack of knowledge that he was violating its provisions, was repealed at a later date.

Violators of the act are punishable by a fine or imprisonment, or both. For the third and subsequent offenses the violators are punishable by a fine of not less than \$500 or more than \$2,000, and imprisonment in the penitentiary for not less than one year or more than five years.

The act of June 14, 1883, gives standards for the composition of vinegar and provides that the sale as apple vinegar of other substance made from any other source shall be punishable by a fine.

The act of July 1, 1885, requires that all canned fruits and vegetables and other articles of canned food, with the exception of goods brought from foreign countries, or packed prior to the passage of the act, bear a mark to indicate the grade or quality of the goods, together with the name and address of the packer or dealer. It is required also that all soaked goods shall be so branded.

The act of June 14, 1897, prohibits the manufacture and sale of colored artificial butter. The manufacture and sale of uncolored butter substitutes is permitted and the method of marking prescribed.

The act of April 24, 1899, provides for the appointment of a State food commissioner and regulates the manufacture and sale of foods. Food is defined as including all articles, whether simple, mixed, or compound, used for food, candy, drink, or condiment, by man or domestic animals. The general definitions of adulterations are given, and special requirements are made regarding vinegar, ice, candy, canned goods, fruits, jellies and jams, and flavoring extracts. Violators of the act are subject to fine or imprisonment, or both.

Indiana.—The act of February 28, 1889, regulates the manufacture and sale of foods and drugs in the State. The terms foods and drugs, as well as what shall constitute the adulteration of each, are defined. The health officers of the State, county, city, and town are made food and drug inspectors, and the president of the State board of health becomes an ex officio food commissioner. The State board of health is required to publish detailed rules and regulations under which the law shall be administered, including standards. Violators of the law are punishable by fine and adulterated goods are confiscated.

Chapter 62 of the Laws of 1883 requires that dealers in adulterated butter and substitutes, and hotels and boarding house keepers who furnish the same to their guests, shall maintain a sign in plain sight bearing the word "oleomargarine."

Section 2071 of the Revised Statutes of 1888 prohibits the sale to cheese and butter factories of adulterated milk, skim milk, or milk from cows that are diseased or fed with improper food.

Iowa.—The sale of impure and adulterated milk and milk from diseased cows is prohibited. The sale of skim milk and of cheese made from the same is permitted when correctly marked.

The sale of lard from diseased hogs is prohibited, while lard mixed with any foreign fat can be sold only when branded "compound lard" in the manner directed by the act.

With the exception of canned or condensed milk or cream, all foods preserved in hermetically sealed packages must be labeled with the name of the packer or wholesale dealer, and the name of the State, city, town, or village where the same are packed, together with the grade or quality of the articles contained therein. In the case of soaked goods, the word "soaked" must be printed on the label in prescribed type.

The sale of all diseased and unwholesome provisions is prohibited.

The use of foreign coloring matter is prohibited in all fats except butter and cheese, unless the article is plainly marked so that the purchaser may be informed of the presence of such substances.

The mixture with foods of substances calculated to make them injurious to health and the mixture with drugs of substances which will lessen the efficacy or change the operation are prohibited. (Sects. 4980-4998, Revised Statutes, Iowa.)

Kansas.—Chapter 100 of the Statutes of 1897 regulates the manufacture and sale of food and drugs in the State. The terms food and drugs are defined, and a general statement, similar to the recent laws adopted in other States, is given regarding conditions under which food and drugs are considered adulterated. A lack of knowledge does not exempt a violator from the penalty. The penalty for violation of the act is fine or imprisonment, or both.

The act of 1874 prohibits the sale to cheese factories of milk from diseased cows, or adulterated milk, skim milk, or milk which was previously sour, or whose composition has been altered by keeping back strippings. The use of poisonous or deleterious matter in the manufacture of cheese is also prohibited. Violations of the act are subject to a fine.

Chapter 1 of the Laws of 1891 regulates the manufacture and sale of cider vinegar. The manufacture and sale of cider vinegar or of any other vinegar or other substances, or of adulterated vinegar, or of vinegar containing lead, copper, and other deleterious substances, are prohibited. The provisions of the act also apply to preparations of fruit, vegetables, etc., in which vinegar is one of the principal ingredients. It is required that casks, barrels, etc., containing cider vinegar be properly branded, and the use of a false brand is considered a violation of the act. Violators of the act are subject to a fine.

Kentucky.—In the session of 1900 this State repealed the law of June 13, 1898, and adopted in its place a general law regulating the manufacture, sale, and branding of food. The term food is defined as including every article used for or entering into the composition of food for man or domestic animals, except spirituous, vinous, or malt liquors. The sale of food containing poisonous or deleterious ingredients is prohibited. The act carefully defines its interpretation of adulteration, and requires that all food which has been subject to any of the forms of adulteration specified shall be so labeled as to show the exact character thereof.

Imitation butter may be sold if properly labeled and free from coloration or ingredient that causes it to look like butter.

No statement is permitted on the label of any food which represents any ingredient or substance as present in the food which is not present, or which names any ingredient or substance present in the food and not all substances present in measurable quantities.

The act does not require that proprietary foods and similar preparations which do not contain unwholesome substances shall disclose their trade formulas, but in the case of baking powders it is required that each package shall be so labeled as to show clearly the nature of the acid salt employed.

It is provided that dealers who can establish a written guaranty of purity from a wholesaler, packer, or manufacturer within the State shall be exempted from prosecution within the act.

The director of the Kentucky Agricultural Experiment Station is empowered to adopt and fix standards of purity, quality, and strength when such standards are not specified or fixed by the statute, to procure samples of food manufactured and on sale within the limits of the State, to subject these samples, and any samples which may be furnished him by the State board of health, to analysis, and to report any cases of violation of the law to the proper prosecuting attorney.

Violators of the law are subject to fine, imprisonment, or both.

Chapter 189 of the Laws of 1893 prohibits the sale of adulterated and impure milk, and its use in the manufacture of butter and cheese, under penalty of fine.

Section 1282 of the Revised Statutes requires that packages containing vinegar shall be labeled with the process of manufacture and the material used in its preparation. Anyone selling vinegar not so labeled, or not as represented on the label, is punishable by fine.

Louisiana.—The laws of Louisiana prohibit the sale of adulterated

foods and drugs. The terms foods and drugs are defined, as well as what shall constitute the adulteration of the same. The intentional violation of the act is punishable by fine. The sale of imitation or artificial butter is prohibited unless the article is properly branded. (Rev. Stat. 1898, pp. 751, 752.)

Maine.—Chapter 128 of the Revised Statutes regulates the manufacture and sale of food and beverages. Section 1 prohibits the sale of diseased, corrupted, or unwholesome provisions for food or drink, the dealer knowing it to be such, without informing the buyer. It also prohibits the adulteration of substances intended for food or beverages. The section also prohibits the killing for meat of calves less than four weeks old and the sale of meat from this source. The penalty for the violation of the section is fine or imprisonment.

Section 3 prohibits the manufacture and sale of colored imitation or adulterated butter and cheese.

Section 7 imposes fine or imprisonment as a penalty for the intentional selling of sugar or molasses adulterated with a number of specified substances.

Sections 8 and 9 prohibit the manufacture and the intentional sale as cider vinegar of vinegar made from other sources than pure apple cider and of vinegar contaminated with lead, copper, sulphuric acid, or other ingredient injurious to health. The violators of these sections are punishable by a fine.

The laws of 1889 prohibit the manufacture and sale of adulterated lard and wheat flour without properly branding the same as compounds. It is further provided that the violators of these provisions shall forfeit \$50 to the use of any person suing therefor in an action of debt.

The laws of 1895 prohibit the manufacture and sale of adulterated and imitation maple sugar or sirup, and the sale of stale or packed eggs as fresh eggs. Anyone violating this provision is subject to fine or imprisonment or both.

Maryland.—Article 43 of the public general laws as amended by chapter 604 of the laws of 1890, regulates the manufacture and sale of foods. It is required that any article of food or drink which has been adulterated in any way can only be sold or offered for sale when labeled with its true and appropriate name and when the purchaser is informed at the time of sale of its true name and ingredients.

The use of glucose, grape sugar, or other article of adulteration in the preparation of sugar, sirup, or honey intended for human food is prohibited.

The use of oleomargarine or other form of fats in the preparation of imitation or adulterated butter and cheese, intended for human food, is also prohibited.

The admixture of glucose, grape sugar, oleomargarine, or other adulterant, with any article of food or dietetics, is only permitted when each package of the substance is distinctly labeled with the true and appropriate name of each adulterant and with the percentage in which each adulterant is stated.

The use of glucose or grape sugar in the manufacture of candy is permitted.

The manufacture and sale of adulterated wine, vinegar, spirituous and malt liquors are prohibited. The manufacture and intentional sale of any substance intended for the food of man, or any wine, vinegar, spirituous, malt, or other liquor, intended for drink or dietetic purposes, are prohibited.

The sale of diseased, corrupted, or unwholesome provisions, not including green fruits and vegetables that may be spoiled in transit, is prohibited.

The State board of health is charged with the duty of enforcing the act, and it is provided that condemned articles shall be destroyed.

Sections 88-91 of the Public General Laws of 1888 prohibit the manufacture and sale of imitation and adulterated butter and cheese.

The violators of these provisions are subject to a fine or imprisonment or both.

Massachusetts.—Chapter 263 of the act of 1882 prohibits the manufacture and sale of adulterated foods and drugs. The terms food and drugs are defined, as well as the term adulteration, as applied to food and to drugs. The preparation and sale of mixtures or compounds recognized as ordinary foods are permitted, provided the same are not injurious to health and are distinctly labeled as mixtures or compounds.

The State board of health is authorized to spend \$11,500 in enforcing the provisions of this act. It is specified that three-fifths of this amount is to be expended in enforcing those portions of the act which relate to milk and its products.

It is provided that dealers in foods and drugs shall furnish samples of the same to inspectors, whenever required to do so, upon tender of the market value of the sample. Violators of the act are subject to fine.

Chapter 208 of the Public Statutes provides that whoever knowingly sells any kind of diseased, corrupted, or unwholesome provisions, without making the same fully known to the buyer, shall be punished by fine or imprisonment. The same penalty is attached to adulterated bread or any other substance intended for food and for knowingly disposing of the same.

In section 4 of the same chapter the addition of certain drugs is prohibited upon the penalty of imprisonment in the State penitentiary for not more than three years and confiscation of the articles so adulterated.

Chapter 100 of the Public Statutes requires that alcoholic liquors must conform to the standard of the Pharmacopoeia of the United States. Also that liquors imported from foreign countries must conform to the standards of the countries from which they are imported.

The adulteration of drugs and medicines and the sale of such adulterated articles, knowing them to be adulterated, are prohibited in chapter 397 of the Act of 1896. The penalty for the violation of the act is fine or imprisonment.

Chapter 397 of the Acts of 1891 imposes a fine for the manufacture or sale of children's toys of confectionery which contains or is coated with arsenic.

Chapter 57 of the Public Statutes prohibits the sale of adulterated milk or milk from diseased cows or cows fed on improper food. Skim milk may be sold as such, but must not be offered as pure milk. Violators of the act are subject to fine or imprisonment.

Chapter 264 of the Acts of 1896 requires that canned and condensed milk must be distinctly labeled with the name of the manufacturer and the brands under which it is made. Violators of the act are subject to fine or imprisonment.

Chapter 56 of the Public Statutes requires that all imitation butter or adulterated butter and cheese which are sold or offered for sale must be appropriately branded in prescribed type.

Chapter 280 of the Acts of 1894 prohibits the use of the terms "dairy," "creamery," or the name of any breed of dairy cattle in connection with labels for imitation or artificial butter. A fine is imposed as the penalty of the violation of the chapter.

Chapter 377 of the Acts of 1896 permits the manufacture and sale of uncolored butter substitutes when properly branded, but forbids the coloring of the same or sale of the colored article. Violators are subject to fine or imprisonment.

Chapter 280 of the Acts of 1894 requires that a conspicuous placard, with the word "oleomargarine" printed thereon in prescribed type, be conspicuously posted in all dwellings, offices, or public marts where oleomargarine is sold, and all vehicles which are used for the sale or delivery of oleomargarine and similar products. The same section requires that keepers of hotels, restaurants, and boarding houses who use oleomargarine or butterine shall inform their guests of that fact. Violators of the section are subject to fine.

Chapter 60 of the Public Statutes regulates the manufacture and sale of cakes and similar products containing chocolate. The same chapter regulates the manufacture and sale of chocolate and vinegar and adopts standards for the same. Violators of the act are punishable by fine.

Chapter 449 of the Act of 1887 requires that the words "pure," "refined," "family," shall not be used in connection with the label on any lard which is adulterated with foreign fat or on any lard substitute, unless the article bear in prescribed type the label "compound lard." Violators of the act are punishable by fine.

Michigan.—Act No. 193 of the Public Acts of 1895 regulates the manufacture and sale of foods in Michigan. The term food is defined as including all articles used for food or drink or intended to be eaten or drunk by man, whether simple, mixed, or compound. The term adulteration as applied to food is defined.

The manufacture and sale as butter of imitation or adulterated butter is prohibited under penalty of fine or imprisonment, or both.

Cheese is defined, and the manufacture of adulterated cheese is prohibited under penalty of fine or imprisonment, or both. Full cream cheese and full milk cheese are defined, and it is provided that all cheese coming under these classes shall be branded as prescribed. The misbranding of cheese is prohibited under penalty of fine or imprisonment, or both.

Lard is defined, and its adulteration is prohibited under penalty of fine or imprisonment, or both. Lard mixed with foreign fats may be sold when marked in the prescribed manner. Adulterated lard, compound lard, and lard substitutes may be sold when marked "lard substitutes" in prescribed type.

The manufacture and sale of adulterated fruit, jellies, and similar preparations are prohibited, and the misbranding of the same is prohibited, the penalty being fine or imprisonment, or both.

It is required that canned fruits and vegetables, and similar products, shall be labeled with the name and address of the manufacturer, and that all soaked or bleached goods be labeled as prescribed.

The manufacture and sale of artificial coffee berries are forbidden, and the sale of adulterated coffee and coffee substitutes is permitted only when such articles are labeled "Coffee compound," together with the name and address of the manufacturer or compounder thereof; and no other label whatever is permitted.

Molasses, sirup, or glucose must be sold in packages distinctly branded with the true and appropriate name. Molasses or sirup mixed with glucose must be sold in packages labeled "Glucose mixture," and the percentage of glucose present must be stated on the label.

The manufacture and sale of alcoholic beverages containing deleterious impurities are prohibited. Violators of the act are punishable by fine or imprisonment, or both.

Act No. 84 of the Public Acts of 1897 prohibits the sale, as buckwheat flour, of adulterated buckwheat flour or other substances. Such adulterated material or foreign substance can only be sold when labeled "Buckwheat-flour substitute," "Adulterated buckwheat flour," or "Buckwheat-flour compound," in prescribed type. The label must also contain the name and address of the factory in which the substance is prepared. Violators of the act are subject to fine or imprisonment, or both.

Act No. 71 of the Public Acts of 1897 provides that all vinegar made by fermentation and oxidation without the intervention of distillation shall be branded "fermented vinegar," with the name of the fruit or substance from which the same is made. The terms apple vinegar and cider vinegar are only permitted to be used on the substance made from pure apple cider. Distilled vinegar must be so branded. The standards of composition are also given. Violators of the act are subject to fine or imprisonment, or both.

Act No. 26 of the Public Acts of 1873 prohibits the intentional sale of adulterated, impure, unwholesome, or skim milk or milk from diseased or improperly fed cows to cheese or butter factories. Violators of the act are punishable by fine.

Act No. 106 of the Public Acts of 1899 regulates the sale of milk. The term milk is defined as including skim milk, buttermilk, and cream in its natural state as coming from the cow. The sale of milk to which water, chemicals, or preservatives of any other form or adulterant has been added is prohibited. Violators of the act are subject to fine or imprisonment, or both.

Act No. 147 of the Public Acts of 1899 regulates the manufacture and sale of imitation butter and butter substitutes. These substances may be sold when labeled as prescribed in the act. Hotels, boarding houses, etc., using adulterated butter or butter substitutes are required to post a sign bearing the words "oleomargarine sold" or "used here" in prescribed type. The use of such terms as "butter," "creamery," or "dairy" is prohibited in connection with any imitation butter or butter substitute. Violators of the act are punishable by fine or imprisonment, or both.

Act No. 254 of the Public Acts of 1899 provides that process butter may be sold, but must be labeled as prescribed in the act. Violators of the act are subject to fine or imprisonment, or both.

Act No. 11 of the Public Acts of 1887 regulates the manufacture and sale of candy and provides that persons manufacturing for sale or knowingly selling candies or confectioneries adulterated by certain specified substances or other deleterious ingredient, may be punished by fine or imprisonment, or both.

Act No. 313 of the Public Acts of 1887 prohibits the addition of deleterious substances to alcoholic beverages and the sale of alcoholic beverages so treated. Violators of the act are punishable by fine or imprisonment.

EXHIBIT NO. 5.

[Senate Report No. 8, Fifty-seventh Congress, first session.]

DIGEST

OF THE

PURE FOOD AND DRUG LAWS OF THE UNITED STATES AND FOREIGN COUNTRIES,

TOGETHER WITH

COURT DECISIONS AFFECTING SAME.

**PREPARED UNDER THE DIRECTION OF THE SENATE COMMITTEE ON MANUFACTURES,
WILLIAM E. MASON, Chairman.**

INTRODUCTION.

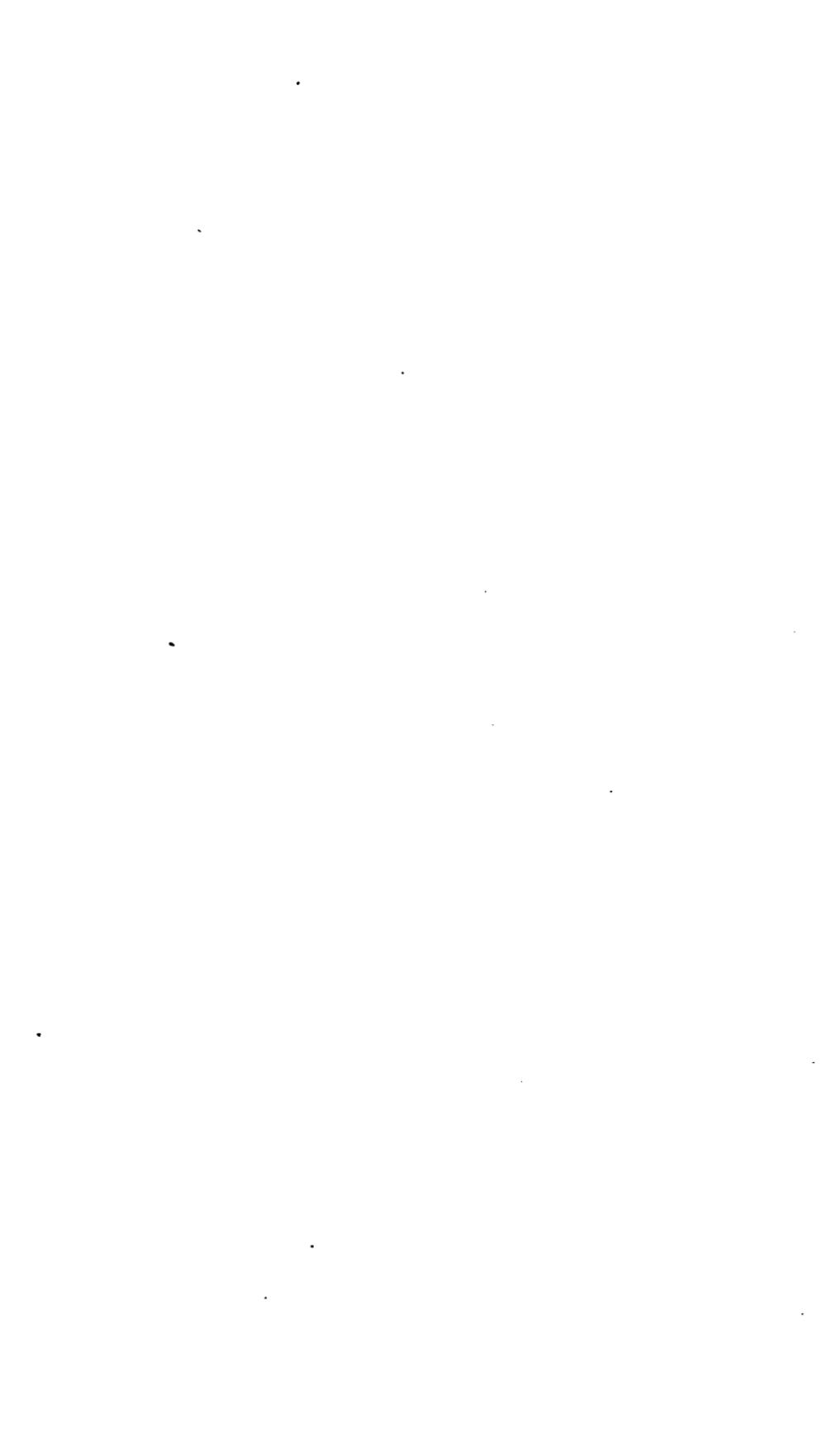
The Committee on Manufactures, which was directed by resolution of the Senate under date of February 19, 1901, to prepare a compilation of the pure food and drug law of the United States and foreign countries, beg leave to report the following digest, which is expected to be a convenience to legislators in considering this most important question of food adulteration.

It may not be inappropriate to call attention to the fact that since the Committee on Manufactures investigated the question of food products the subject has become a vital one in a large number of the States, the legislatures of which have passed laws prohibiting the adulteration of food and drugs. Indeed, it may be stated that to-day every State in the Union has some general or specific law upon the question of food and drug adulteration.

The bill recommended by this committee, known as the "flour bill," has been of inestimable value, and the committee can safely state that it has practically ended the adulteration of American flour which, at the time of the passage of the bill, was a most common practice. Thousands of barrels of mixed flour were confiscated during the first year of the enforcement of the act. Every mill engaged in grinding white earth as a substitute for flour has closed its business. The health of the people has been protected thereby; the honest manufacturer has been relieved of the unfair competition which he had to meet with those who adulterated their flour. The reputation of American flour increased at home and abroad. The export of American flour the first twelve months after the passage of the bill increased from 10,000,000 to 15,000,000 barrels, which, in the opinion of the committee, as shown by correspondence with the leading exporters, was largely due to the fact that every barrel of American flour is guaranteed by the Government to be pure.

This instance is cited to encourage further proper pure-food legislation in accordance with bills reported by this committee. The committee is of the opinion that there should be national legislation upon this subject; as that would control interstate commerce in adulterated foods; it is the only way to guarantee uniformity of legislation, and will substantially help our American products in foreign markets by giving it the Government guaranty, which is largely demanded by our customers abroad.

Wm. E. MASON, *Chairman.*



DIGEST OF PURE FOOD AND DRUG LAWS OF THE UNITED STATES AND OF FOREIGN COUNTRIES.

LAWS OF UNITED STATES.

Alabama.—The sale and exposing for sale of tainted or unwholesome meat, fish, and the flesh of diseased animals and animals dying otherwise than by slaughter are prohibited.

Bread, biscuit, and crackers must not be sold without the name or initials of the baker legibly marked on each article, and the sale of bread prepared from sour or unwholesome flour is prohibited.

The mixing of foreign matter with sugar, sirup, or molasses, lard or butter, or other articles of food so as to deteriorate or change the quality thereof, and the sale and exposure for sale of such adulterated goods are prohibited.

The manufacture and sale of uncolored oleomargarine stamped with its true name are permitted, but the manufacture and sale as well as possession with intent to sell or to serve to hotels and boarding-house guests of colored artificial butter and similar products are prohibited.

The manufacture and exposure for sale of liquors mixed with any poisonous or unwholesome drugs or oil are prohibited.

The manufacture of candies and confections containing mineral impurities, poisonous colors, flavors, extracts, or other ingredients injurious to health, are prohibited. It is also prohibited to knowingly sell, give away, or keep for sale goods of this nature.

Violators of that portion of this act relating to oleomargarine, alcoholic liquors, and the branding of bread are punishable by fine. For violations of other provisions the fine may be supplemented by imprisonment in the county jail or sentence to hard labor. (Code of Alabama, 1896, Vol. II, secs. 5321-5328.)

Arizona.—The sale of tainted, decayed, spoiled, or otherwise unwholesome food, drink, or medicine, with intent to permit the same to be eaten or drunk, is prohibited.

The adulteration and dilution, for sale as pure, of food, drink, drug, medicine, spirituous and malt liquor and wine, and the sale and offer for sale as pure of such adulterated or diluted food, drink, drug, medicine, spirituous and malt liquor and wine, are prohibited by the penal code. (Sects. 606, 607.)

Arkansas.—The act of April 13, 1898, prohibits the sale of deteriorated or diseased or decayed meat, fish, fowls, vegetable produce, or provisions of any kind, without making the same fully known to the purchaser. The sale for food of the flesh of any animal dying otherwise than by slaughter, or the flesh of any animal slaughtered when diseased, and of the meat of any calf which was killed before it had

attained the age of six weeks, are also prohibited. Violators of the law are punished by a fine not exceeding \$500, or by imprisonment for not exceeding six months.

The act of March 31, 1885, provides that butter substitutes and adulterated butter shall have the words "adulterated butter," "oleo-margarine," or "butterine," or such other name as shall properly describe it, marked in letters of plain roman type not less than one inch in length, upon the top and side of every package. Retail dealers are also required to label the outside wrapper of each package with a similar description, in printed letters of plain roman type, not less than $1\frac{1}{4}$ inches in length. Violators of the act are punishable by a fine of not less than \$50 or not more than \$500. The same act requires that hotel and restaurant or boarding house keepers who serve butter substitutes or adulterated butter shall have the dish or plate holding the same so marked as to indicate that fact. Violators of this provision are fined not less than \$5 and not more than \$100. The term "butter" is designated as "the product usually known by that name which is manufactured exclusively from milk and cream."

California.—The act of March 26, 1895, prohibits the manufacture and sale of adulterated food and drugs. The terms "food" and "drugs" are defined as well as what the adulteration of each shall consist of. The act is patterned after the New York law. It is provided that the provisions of the act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if each and every package sold or offered for sale be distinctly labeled as mixtures or compounds, with the name and percentage of each ingredient therein, and are not injurious to health. Dealers and manufacturers are required to furnish samples, on application for the same, with the tender of the value of the sample. Violators of the act are punishable by fine or imprisonment, or both.

The act of March 4, 1897, regulates the manufacture and sale of imitation butter and similar compounds. The manufacture of skim-milk cheese is permitted. The manufacture and sale of uncolored butter substitutes and cheese substitutes are permitted, but the same must be distinctly labeled "Substitute for butter" or "Substitute for cheese," as the case may be, in prescribed type, and also with the name and address of the manufacturer, the name of the place where manufactured, and the names and actual percentage of the various ingredients used in their manufacture. Common carriers are prohibited from knowingly handling butter and cheese substitutes which are not properly marked. Hotels, boarding houses, and places of public entertainment, which use butter substitutes or cheese substitutes, are required to notify their patrons of the same, and the use of these articles for State institutions is prohibited. The violators of this act are punishable by fine or imprisonment, or both.

The act of March 26, 1895, prohibits the sale or offer for sale of imitation honey, both comb and strained. Violators of the act are punishable by fine or imprisonment, or both.

Colorado.—The laws of 1887 require that adulterated articles of food and drink shall be so marked as to give the purchaser correct information regarding their character. The sale of milk to creameries is also regulated.

Chapter 19 of the laws of 1895 prohibit the manufacture and sale of oleaginous materials which are intended to imitate or take the place of

butter and cheese. The manufacture of uncolored oleomargarine and of skim and imitation milk cheese are permitted when properly marked. All cheese factories are required to mark their product "full cream cheese" or "imitation," according to its character, with brands and stencils which are furnished by the State's dairy commissioner. Standards of composition are given. Violators of the act are subject to fine or imprisonment.

Connecticut.—The act of June 26, 1895, as amended by the act of March 23, 1899, prohibits the manufacture and sale of adulterated or deteriorated food. The State experiment station is empowered to fix standards of purity, quality, or strength when such standards are not specified by law. The prohibition includes all articles intended as food for man, horses, or cattle. Any one knowingly violating the provisions of the act is subject to a fine of not more than \$500 or imprisonment for not more than one year.

The act of May 18, 1893, regulates the manufacture and sale of imitation butter. It is provided that any article resembling butter in appearance and not made wholly (salt and coloring matter excepted) from the milk of cows shall be imitation butter within the meaning of the act. It is further provided that the words "butter," "dairy," or "creamery" shall form neither the whole nor a part of the name, nor be used in the description of any imitation butter.

The coloring of imitation butter to imitate butter is prohibited. The sale of uncolored imitation butter is permitted.

The act also provides that a sign shall be maintained in plain sight on all premises where imitation butter, or food containing it, is sold, and on all wagons selling or delivering the same.

It is also provided that hotels, boarding houses, and restaurants which serve imitation butter or food containing it shall maintain a sign in plain sight of all guests.

The act requires that the dairy commissioner and his deputy shall have full access, at all reasonable hours, to all places where it is suspected that imitation butter is made, sold, used, kept, or stored in transit, and that he shall receive samples of suspected articles on tender of the market price of good butter.

Agents of railroad and express companies are required, on request, to give to the commissioner, or his deputy, details regarding any consignment of imitation butter. The act describes in detail the signs which shall be used in various cases and provides that such signs shall be furnished, at the actual cost, by the dairy commissioner and placed under his supervision. Boarding-house keepers serving imitation butter, or food containing it, in violation of this act, are subject to a fine, for the first offense, of \$25, or imprisonment of not exceeding thirty days, or both. Other violators of the act are subject to a fine of not more than \$100, or imprisonment of not more than sixty days, or both, for the first offense. In both cases, the fine and imprisonment may be doubled for each subsequent offense. The act further provides that evidence of any violation shall be *prima facie* evidence of willful violation with knowledge.

The act of May 5, 1897, provides that when tub butter is sold in the form of bricks, pats, or balls, such packages shall be labeled as prescribed in the act. Violators of the act are subject to a fine of not more than \$100.

The act of June 21, 1889, specifies the manner in which the manu-

facturers of vinegar must brand each package. The true name, such as cider vinegar, wine vinegar, malt vinegar, or wood acid vinegar, must always be employed. The act does not apply to retail sale at the place of manufacture in quantities of less than 5 gallons and in open packages. The addition of any drug or any hurtful or foreign substance or coloring matter or acid to vinegar is prohibited. Standards for cider vinegar are included in the law. Violators of the act are punishable by fine and imprisonment. Evidence of violation of the act is *prima facie* evidence of willful violation with knowledge.

Special regulations were also made at the same date regulating the adulteration of molasses. The adulteration of molasses with salts of tin, terra alba, glucose, dextrose, starch sugar, corn syrup, or other preparations of or from starch is prohibited.

Delaware.—The manufacture and sale of oleaginous substances resembling butter and cheese and the manufacture and sale of adulterated butter and cheese are prohibited. Violators of the law are punishable by a fine. (Rev. Stat., 1895, p. 544.)

The adulteration of drugs and medicines is a misdemeanor.

District of Columbia.—A general law has been enacted prohibiting the sale of food and drugs which have been adulterated with deleterious substances, and requiring that the admixture of permissible substances shall be stated on the label. (Rev. Stat. U. S., 1898, chap. 25, p. 246.)

Special laws prohibiting the sale of adulterated milk and providing that skim milk and imitation or adulterated butter and cheese may be sold only under prescribed conditions have been enacted. (Rev. Stat. U. S., 1895, p. 401.)

The manufacture and sale of candy adulterated with injurious substances are also prohibited. (Rev. Stat. U. S., 1898, chap. 241, p. 398.)

Florida.—The adulteration, for the purpose of sale, of bread and other substances intended for food, and beverages, and the sale, with the knowledge of their true character, of diseased, unwholesome, and adulterated articles of food and drink, without informing the purchaser of the character of the goods, are prohibited. The intentional sale as butter of spurious preparations purporting to be butter, and the serving of the same by hotel and boarding-house keepers without giving notice to guests at the table are prohibited. Violators of the act are subject to fine or imprisonment. (Rev. Stat., 1892, 2659-2664.)

Georgia.—Article 16 of the Code of Georgia for 1895 regulates the sale of adulterated food and drink. The sale of the flesh of diseased animals and of other unwholesome foods is prohibited. The sale of unwholesome bread, drink, or pernicious and adulterated liquor, with knowledge, is prohibited.

The intentional sale of adulterated food which is not so labeled as to give the purchaser correct information regarding its nature, is prohibited, and dealers are also required to inform customers of the nature of the goods they buy at the time of the sale.

The sale of unclean, impure, or adulterated milk, or milk from diseased animals is prohibited. Skim milk may be sold as such, but not as whole milk.

Imitation butter and cheese are carefully defined. The manufacture of imitation butter and cheese is permitted when no coloring matter is used, but the coloring of such articles to imitate butter and cheese is prohibited. The violation of this act is made a misdemeanor.

Article 17, code of Georgia, 1895, prohibits the manufacture and sale of adulterated drugs, medicines, and pharmaceutical preparations. Adulteration in these cases is carefully defined. The violation of the act is considered a misdemeanor.

Idaho.—The adulteration of any article of food, with the intent to sell the same as unadulterated, is prohibited by the penal code of the Revised Statutes of Idaho, section 6918.

Section 6917 of the same code regulates the manufacture and sale of imitation and adulterated butter. The manufacture and sale of oleo-margarine, butterine, and adulterated butter are permitted only in packages which are branded in the prescribed manner. The sale of these articles as butter, or without being marked as prescribed in the act, is considered a misdemeanor.

Illinois.—The act of May 25, 1877, provides that no barley, wheat, or other grain shall be subjected to fumigation, by sulphur or other material, to any chemical or coloring process whereby the color, quality, or germ of such grain is affected. The sale of grain so treated is also prohibited. The violators of the act are subject to fine and imprisonment.

The act of May 29, 1879, prohibits the adulteration of milk and the sale of adulterated or unwholesome milk. The keeping of diseased cows for milk supply is also prohibited, and a method of marking is prescribed for cans, etc., of milk dealers. The sale of skim milk is permitted under its own name and when conspicuously marked with words "skim milk."

Violators of this act are subject to fine or imprisonment, or both.

The act of May 31, 1879, requires that artificial and adulterated butter and cheese shall be so marked as to inform the purchaser of their true character. Anyone knowingly violating the act is subject to fine or imprisonment, or both.

The act of June 1, 1881, relates to the manufacture and sale of butter and cheese. The act prohibits the manufacture, sale, and giving away of imitation and adulterated butter and cheese for the pure article. The violators of the act are subject to fine.

The act of June 1, 1881, prohibits the adulteration of foods, drugs, and medicines, and the sale of such adulterated articles, except under such prescribed conditions as shall inform the purchaser of their true character. Section 6 of this act, which provided for the exemption of a person proving a lack of knowledge that he was violating its provisions, was repealed at a later date.

Violators of the act are punishable by a fine or imprisonment, or both. For the third and subsequent offenses the violators are punishable by a fine of not less than \$500 or more than \$2,000, and imprisonment in the penitentiary for not less than one year or more than five years.

The act of June 14, 1883, gives standards for the composition of vinegar and provides that the sale as apple vinegar of other substance made from any other source shall be punishable by a fine.

The act of July 1, 1885, requires that all canned fruits and vegetables and other articles of canned food, with the exception of goods brought from foreign countries, or packed prior to the passage of the act, bear a mark to indicate the grade or quality of the goods, together with the name and address of the packer or dealer. It is required also that all soaked goods shall be so branded.

The act of June 14, 1897, prohibits the manufacture and sale of colored artificial butter. The manufacture and sale of uncolored butter substitutes is permitted and the method of marking prescribed.

The act of April 24, 1899, provides for the appointment of a State food commissioner and regulates the manufacture and sale of foods. Food is defined as including all articles, whether simple, mixed, or compound, used for food, candy, drink, or condiment, by man or domestic animals. The general definitions of adulterations are given, and special requirements are made regarding vinegar, ice, candy, canned goods, fruits, jellies and jams, and flavoring extracts. Violators of the act are subject to fine or imprisonment, or both.

Indiana.—The act of February 28, 1889, regulates the manufacture and sale of foods and drugs in the State. The terms foods and drugs, as well as what shall constitute the adulteration of each, are defined. The health officers of the State, county, city, and town are made food and drug inspectors, and the president of the State board of health becomes an ex officio food commissioner. The State board of health is required to publish detailed rules and regulations under which the law shall be administered, including standards. Violators of the law are punishable by fine and adulterated goods are confiscated.

Chapter 62 of the Laws of 1883 requires that dealers in adulterated butter and substitutes, and hotels and boarding house keepers who furnish the same to their guests, shall maintain a sign in plain sight bearing the word "oleomargarine."

Section 2071 of the Revised Statutes of 1888 prohibits the sale to cheese and butter factories of adulterated milk, skim milk, or milk from cows that are diseased or fed with improper food.

Iowa.—The sale of impure and adulterated milk and milk from diseased cows is prohibited. The sale of skim milk and of cheese made from the same is permitted when correctly marked.

The sale of lard from diseased hogs is prohibited, while lard mixed with any foreign fat can be sold only when branded "compound lard" in the manner directed by the act.

With the exception of canned or condensed milk or cream, all foods preserved in hermetically sealed packages must be labeled with the name of the packer or wholesale dealer, and the name of the State, city, town, or village where the same are packed, together with the grade or quality of the articles contained therein. In the case of soaked goods, the word "soaked" must be printed on the label in prescribed type.

The sale of all diseased and unwholesome provisions is prohibited.

The use of foreign coloring matter is prohibited in all fats except butter and cheese, unless the article is plainly marked so that the purchaser may be informed of the presence of such substances.

The mixture with foods of substances calculated to make them injurious to health and the mixture with drugs of substances which will lessen the efficacy or change the operation are prohibited. (Secs. 4980-4998, Revised Statutes, Iowa.)

Kansas.—Chapter 100 of the Statutes of 1897 regulates the manufacture and sale of food and drugs in the State. The terms food and drugs are defined, and a general statement, similar to the recent laws adopted in other States, is given regarding conditions under which food and drugs are considered adulterated. A lack of knowledge does not exempt a violator from the penalty. The penalty for violation of the act is fine or imprisonment, or both.

The act of 1874 prohibits the sale to cheese factories of milk from diseased cows, or adulterated milk, skim milk, or milk which was previously sour, or whose composition has been altered by keeping back strippings. The use of poisonous or deleterious matter in the manufacture of cheese is also prohibited. Violations of the act are subject to a fine.

Chapter 1 of the Laws of 1891 regulates the manufacture and sale of cider vinegar. The manufacture and sale of cider vinegar or of any other vinegar or other substances, or of adulterated vinegar, or of vinegar containing lead, copper, and other deleterious substances, are prohibited. The provisions of the act also apply to preparations of fruit, vegetables, etc., in which vinegar is one of the principal ingredients. It is required that casks, barrels, etc., containing cider vinegar be properly branded, and the use of a false brand is considered a violation of the act. Violators of the act are subject to a fine.

Kentucky.—In the session of 1900 this State repealed the law of June 13, 1898, and adopted in its place a general law regulating the manufacture, sale, and branding of food. The term food is defined as including every article used for or entering into the composition of food for man or domestic animals, except spirituous, vinous, or malt liquors. The sale of food containing poisonous or deleterious ingredients is prohibited. The act carefully defines its interpretation of adulteration, and requires that all food which has been subject to any of the forms of adulteration specified shall be so labeled as to show the exact character thereof.

Imitation butter may be sold if properly labeled and free from coloration or ingredient that causes it to look like butter.

No statement is permitted on the label of any food which represents any ingredient or substance as present in the food which is not present, or which names any ingredient or substance present in the food and not all substances present in measurable quantities.

The act does not require that proprietary foods and similar preparations which do not contain unwholesome substances shall disclose their trade formulas, but in the case of baking powders it is required that each package shall be so labeled as to show clearly the nature of the acid salt employed.

It is provided that dealers who can establish a written guaranty of purity from a wholesaler, packer, or manufacturer within the State shall be exempted from prosecution within the act.

The director of the Kentucky Agricultural Experiment Station is empowered to adopt and fix standards of purity, quality, and strength when such standards are not specified or fixed by the statute, to procure samples of food manufactured and on sale within the limits of the State, to subject these samples, and any samples which may be furnished him by the State board of health, to analysis, and to report any cases of violation of the law to the proper prosecuting attorney.

Violators of the law are subject to fine, imprisonment, or both.

Chapter 189 of the Laws of 1893 prohibits the sale of adulterated and impure milk, and its use in the manufacture of butter and cheese, under penalty of fine.

Section 1282 of the Revised Statutes requires that packages containing vinegar shall be labeled with the process of manufacture and the material used in its preparation. Anyone selling vinegar not so labeled, or not as represented on the label, is punishable by fine.

Louisiana.—The laws of Louisiana prohibit the sale of adulterated

foods and drugs. The terms foods and drugs are defined, as well as what shall constitute the adulteration of the same. The intentional violation of the act is punishable by fine. The sale of imitation or artificial butter is prohibited unless the article is properly branded. (Rev. Stat. 1898, pp. 751, 752.)

Maine.—Chapter 128 of the Revised Statutes regulates the manufacture and sale of food and beverages. Section 1 prohibits the sale of diseased, corrupted, or unwholesome provisions for food or drink, the dealer knowing it to be such, without informing the buyer. It also prohibits the adulteration of substances intended for food or beverages. The section also prohibits the killing for meat of calves less than four weeks old and the sale of meat from this source. The penalty for the violation of the section is fine or imprisonment.

Section 3 prohibits the manufacture and sale of colored imitation or adulterated butter and cheese.

Section 7 imposes fine or imprisonment as a penalty for the intentional selling of sugar or molasses adulterated with a number of specified substances.

Sections 8 and 9 prohibit the manufacture and the intentional sale as cider vinegar of vinegar made from other sources than pure apple cider and of vinegar contaminated with lead, copper, sulphuric acid, or other ingredient injurious to health. The violators of these sections are punishable by a fine.

The laws of 1889 prohibit the manufacture and sale of adulterated lard and wheat flour without properly branding the same as compounds. It is further provided that the violators of these provisions shall forfeit \$50 to the use of any person suing therefor in an action of debt.

The laws of 1895 prohibit the manufacture and sale of adulterated and imitation maple sugar or sirup, and the sale of stale or packed eggs as fresh eggs. Anyone violating this provision is subject to fine or imprisonment or both.

Maryland.—Article 43 of the public general laws as amended by chapter 604 of the laws of 1890, regulates the manufacture and sale of foods. It is required that any article of food or drink which has been adulterated in any way can only be sold or offered for sale when labeled with its true and appropriate name and when the purchaser is informed at the time of sale of its true name and ingredients.

The use of glucose, grape sugar, or other article of adulteration in the preparation of sugar, sirup, or honey intended for human food is prohibited.

The use of oleomargarine or other form of fats in the preparation of imitation or adulterated butter and cheese, intended for human food, is also prohibited.

The admixture of glucose, grape sugar, oleomargarine, or other adulterant, with any article of food or dietetics, is only permitted when each package of the substance is distinctly labeled with the true and appropriate name of each adulterant and with the percentage in which each adulterant is stated.

The use of glucose or grape sugar in the manufacture of candy is permitted.

The manufacture and sale of adulterated wine, vinegar, spirituous and malt liquors are prohibited. The manufacture and intentional sale of any substance intended for the food of man, or any wine, vinegar, spirituous, malt, or other liquor, intended for drink or dietetic purposes, are prohibited.

The sale of diseased, corrupted, or unwholesome provisions, not including green fruits and vegetables that may be spoiled in transit, is prohibited.

The State board of health is charged with the duty of enforcing the act, and it is provided that condemned articles shall be destroyed.

Sections 88-91 of the Public General Laws of 1888 prohibit the manufacture and sale of imitation and adulterated butter and cheese.

The violators of these provisions are subject to a fine or imprisonment or both.

Massachusetts.—Chapter 263 of the act of 1882 prohibits the manufacture and sale of adulterated foods and drugs. The terms food and drugs are defined, as well as the term adulteration, as applied to food and to drugs. The preparation and sale of mixtures or compounds recognized as ordinary foods are permitted, provided the same are not injurious to health and are distinctly labeled as mixtures or compounds.

The State board of health is authorized to spend \$11,500 in enforcing the provisions of this act. It is specified that three-fifths of this amount is to be expended in enforcing those portions of the act which relate to milk and its products.

It is provided that dealers in foods and drugs shall furnish samples of the same to inspectors, whenever required to do so, upon tender of the market value of the sample. Violators of the act are subject to fine.

Chapter 208 of the Public Statutes provides that whoever knowingly sells any kind of diseased, corrupted, or unwholesome provisions, without making the same fully known to the buyer, shall be punished by fine or imprisonment. The same penalty is attached to adulterated bread or any other substance intended for food and for knowingly disposing of the same.

In section 4 of the same chapter the addition of certain drugs is prohibited upon the penalty of imprisonment in the State penitentiary for not more than three years and confiscation of the articles so adulterated.

Chapter 100 of the Public Statutes requires that alcoholic liquors must conform to the standard of the Pharmacopoeia of the United States. Also that liquors imported from foreign countries must conform to the standards of the countries from which they are imported.

The adulteration of drugs and medicines and the sale of such adulterated articles, knowing them to be adulterated, are prohibited in chapter 397 of the Act of 1896. The penalty for the violation of the act is fine or imprisonment.

Chapter 397 of the Acts of 1891 imposes a fine for the manufacture or sale of children's toys of confectionery which contains or is coated with arsenic.

Chapter 57 of the Public Statutes prohibits the sale of adulterated milk or milk from diseased cows or cows fed on improper food. Skim milk may be sold as such, but must not be offered as pure milk. Violators of the act are subject to fine or imprisonment.

Chapter 264 of the Acts of 1896 requires that canned and condensed milk must be distinctly labeled with the name of the manufacturer and the brands under which it is made. Violators of the act are subject to fine or imprisonment.

Chapter 56 of the Public Statutes requires that all imitation butter or adulterated butter and cheese which are sold or offered for sale must be appropriately branded in prescribed type.

Chapter 280 of the Acts of 1894 prohibits the use of the terms "dairy," "creamery," or the name of any breed of dairy cattle in connection with labels for imitation or artificial butter. A fine is imposed as the penalty of the violation of the chapter.

Chapter 377 of the Acts of 1896 permits the manufacture and sale of uncolored butter substitutes when properly branded, but forbids the coloring of the same or sale of the colored article. Violators are subject to fine or imprisonment.

Chapter 280 of the Acts of 1894 requires that a conspicuous placard, with the word "oleomargarine" printed thereon in prescribed type, be conspicuously posted in all dwellings, offices, or public marts where oleomargarine is sold, and all vehicles which are used for the sale or delivery of oleomargarine and similar products. The same section requires that keepers of hotels, restaurants, and boarding houses who use oleomargarine or butterine shall inform their guests of that fact. Violators of the section are subject to fine.

Chapter 60 of the Public Statutes regulates the manufacture and sale of cakes and similar products containing chocolate. The same chapter regulates the manufacture and sale of chocolate and vinegar and adopts standards for the same. Violators of the act are punishable by fine.

Chapter 449 of the Act of 1887 requires that the words "pure," "refined," "family," shall not be used in connection with the label on any lard which is adulterated with foreign fat or on any lard substitute, unless the article bear in prescribed type the label "compound lard." Violators of the act are punishable by fine.

Michigan.—Act No. 193 of the Public Acts of 1895 regulates the manufacture and sale of foods in Michigan. The term food is defined as including all articles used for food or drink or intended to be eaten or drunk by man, whether simple, mixed, or compound. The term adulteration as applied to food is defined.

The manufacture and sale as butter of imitation or adulterated butter is prohibited under penalty of fine or imprisonment, or both.

Cheese is defined, and the manufacture of adulterated cheese is prohibited under penalty of fine or imprisonment, or both. Full cream cheese and full milk cheese are defined, and it is provided that all cheese coming under these classes shall be branded as prescribed. The misbranding of cheese is prohibited under penalty of fine or imprisonment, or both.

Lard is defined, and its adulteration is prohibited under penalty of fine or imprisonment, or both. Lard mixed with foreign fats may be sold when marked in the prescribed manner. Adulterated lard, compound lard, and lard substitutes may be sold when marked "lard substitutes" in prescribed type.

The manufacture and sale of adulterated fruit, jellies, and similar preparations are prohibited, and the misbranding of the same is prohibited, the penalty being fine or imprisonment, or both.

It is required that canned fruits and vegetables, and similar products, shall be labeled with the name and address of the manufacturer, and that all soaked or bleached goods be labeled as prescribed.

The manufacture and sale of artificial coffee berries are forbidden, and the sale of adulterated coffee and coffee substitutes is permitted only when such articles are labeled "Coffee compound," together with the name and address of the manufacturer or compounder thereof; and no other label whatever is permitted.

Molasses, sirup, or glucose must be sold in packages distinctly branded with the true and appropriate name. Molasses or sirup mixed with glucose must be sold in packages labeled "Glucose mixture," and the percentage of glucose present must be stated on the label.

The manufacture and sale of alcoholic beverages containing deleterious impurities are prohibited. Violators of the act are punishable by fine or imprisonment, or both.

Act No. 84 of the Public Acts of 1897 prohibits the sale, as buckwheat flour, of adulterated buckwheat flour or other substances. Such adulterated material or foreign substance can only be sold when labeled "Buckwheat-flour substitute," "Adulterated buckwheat flour," or "Buckwheat-flour compound," in prescribed type. The label must also contain the name and address of the factory in which the substance is prepared. Violators of the act are subject to fine or imprisonment, or both.

Act No. 71 of the Public Acts of 1897 provides that all vinegar made by fermentation and oxidation without the intervention of distillation shall be branded "fermented vinegar," with the name of the fruit or substance from which the same is made. The terms apple vinegar and cider vinegar are only permitted to be used on the substance made from pure apple cider. Distilled vinegar must be so branded. The standards of composition are also given. Violators of the act are subject to fine or imprisonment, or both.

Act No. 26 of the Public Acts of 1873 prohibits the intentional sale of adulterated, impure, unwholesome, or skim milk or milk from diseased or improperly fed cows to cheese or butter factories. Violators of the act are punishable by fine.

Act No. 106 of the Public Acts of 1899 regulates the sale of milk. The term milk is defined as including skim milk, buttermilk, and cream in its natural state as coming from the cow. The sale of milk to which water, chemicals, or preservatives of any other form or adulterant has been added is prohibited. Violators of the act are subject to fine or imprisonment, or both.

Act No. 147 of the Public Acts of 1899 regulates the manufacture and sale of imitation butter and butter substitutes. These substances may be sold when labeled as prescribed in the act. Hotels, boarding houses, etc., using adulterated butter or butter substitutes are required to post a sign bearing the words "oleomargarine sold" or "used here" in prescribed type. The use of such terms as "butter," "creamery," or "dairy" is prohibited in connection with any imitation butter or butter substitute. Violators of the act are punishable by fine or imprisonment, or both.

Act No. 254 of the Public Acts of 1899 provides that process butter may be sold, but must be labeled as prescribed in the act. Violators of the act are subject to fine or imprisonment, or both.

Act No. 11 of the Public Acts of 1887 regulates the manufacture and sale of candy and provides that persons manufacturing for sale or knowingly selling candies or confectioneries adulterated by certain specified substances or other deleterious ingredient, may be punished by fine or imprisonment, or both.

Act No. 313 of the Public Acts of 1887 prohibits the addition of deleterious substances to alcoholic beverages and the sale of alcoholic beverages so treated. Violators of the act are punishable by fine or imprisonment.

Minnesota.—Chapter 295 of the General Laws of 1899 provides for the appointment of a dairy and food commissioner, who shall have charge of enforcing the dairy and food laws of the State regarding the manufacture and sale of dairy products, their imitation, and substitutes, and foods prepared therefrom.

The sale of unclean, impure, unhealthful, unwholesome, or adulterated milk or cream is prohibited. Regulations for the care of cows whose milk is used as a commercial article are provided. The manufacture of food from unclean, impure, unhealthful, or unwholesome milk, or from cream from the same, is prohibited. Skim milk can only be sold from vessels or packages labeled "skim milk" in prescribed type. The sale of adulterants and preservatives for dairy products and the addition of such substances to dairy products is prohibited. The sale of adulterated, impure, skim, or sour milk to dairies and creameries is prohibited, except that pure skim milk may be sold to skim cheese factories.

The sale of adulterated butter and butter substitutes is prohibited. It is provided that the food commissioner shall provide a uniform stencil brand for full cream cheese and for milk cheese, and the misuse of such brands is made a violation of the act. Dealers in skim cheese are required to post in a conspicuous place a sign bearing the words "Skim cheese sold here." Hotels, boarding houses, etc., which use adulterated butter or butter substitute, are required to state that fact in prescribed type at the head of their bill of fare, or, where no bill of fare is used, on a sign posted in a conspicuous place on each side of the dining room. Violators of the act are punishable by fine or imprisonment.

Chapter 94 of the General Laws of 1899 prohibits the manufacture and sale of renovated butter, unless the same is so branded in prescribed type. Violators of the act are subject to fine or imprisonment.

Chapter 257 of the General Laws of 1899 prohibits the sale of dairy products containing any chemical preservative other than common salt, under penalty of a fine.

Chapter 141 of the General Laws of 1887 prohibits the manufacture and sale of butter made by any process by which the casein of milk is made to imitate and resemble genuine butter. Violators of the act are subject to a fine.

Special laws have been enacted regulating the sale of vinegar, baking powder, lard, honey, and candy.

Mississippi.—Section 1242 of the Annotated Code of Mississippi of 1892 provides that adulterated butter and imitation butter must be plainly marked in such a manner as to inform the purchaser of its true nature. Violators of the act are punishable by fine, imprisonment, or both.

Sections 2095 to 2107 of the same code regulate the manufacture and sale of deteriorated and adulterated foods. The terms food and drugs are defined, and also the term adulterated as applied to foods and drugs. Tainted, putrid, or unwholesome provisions, when offered for food as human food, are forfeited to the county. The same course is followed with underweight barrels of flour, meal, pork, and beef, and also with adulterated foods and drugs. Violators of the act are also punishable by a fine or imprisonment.

Missouri.—The acts of 1897 prohibit the manufacture and sale of

skim-milk cheese, unless the same be labeled as prescribed in the law, under penalty of fine or imprisonment, or both.

Public and private carriers are prohibited from transporting cheese which does not comply with the requirements of this act, under penalty of fine.

The laws of 1885 prohibit the manufacture and sale of colored artificial butter or adulterated butter, and require that the uncolored article shall be marked as prescribed in the law. Violators of the act are punishable by fine.

The laws of 1891 require that vinegar must be free from artificial coloring or flavor, require the labeling of all casks of fruit vinegar, and prohibit the manufacture and sale as cider vinegar of vinegar made from other sources.

A general food law was passed in 1889 which defines food, drink, and adulterated, as applied to both articles, and prohibits the manufacture of adulterated food and drink. The sale of oleomargarine, butter, lardine, and mixtures or compound of tallow, beef fat, suet, lard, and vegetable oils is regulated. The manufacture and sale of adulterated candy are especially prohibited. The penalty of a violation of the act is a fine or imprisonment, or both.

Montana.—A revenue tax of 10 cents a pound is levied on all oleomargarine, butterine, and imitation cheese sold within the State.

Sections 682-685 of the Penal Code regulate the manufacture and sale of foods. The adulteration of foods, drugs, medicine, spirituous or malt liquor, and wine, with fraudulent intent, is prohibited, and also the sale of such adulterated goods as unadulterated. The intentional sale, as food, of tainted, decayed, or otherwise unwholesome food, or food that is unfit to be eaten or drunk, is prohibited.

The manufacture and sale of imitation or adulterated butter and cheese are permitted, but it is provided that each package of such article shall be labeled oleomargarine or imitation cheese in prescribed type. All dealers in imitation butter or imitation cheese and all hotel and boarding-house keepers are required to post signs in plain sight in their places of business, bearing the words "oleomargarine" or "imitation cheese sold (or used) here," in prescribed type.

Nebraska.—The act of March 5, 1895, prohibits the manufacture of imitation and adulterated butter and cheese within the State, unless the same be branded "imitation butter" or "imitation cheese," as the case may be, in prescribed type.

Public and private carriers are not allowed to knowingly carry any imitation or adulterated butter and cheese, unless the same be branded as prescribed in the law. Violators of the act are subject to fine or imprisonment, or both.

It is further provided, under penalty of fine or imprisonment, that bakers, public institutions, dining cars, etc., using imitation butter or imitation cheese must post the same as prescribed in the act.

Chapter 3, of the laws of 1897, regulates the sale of cider. The term cider is defined, certain forms of adulteration specified, and all forms of adulteration prohibited. If any foreign substance be added, the act provides that each cask of cider so treated shall be marked in a prescribed manner.

Chapter 4 of the laws of 1897 defines vinegar and prohibits the sale as cider vinegar of anything not made exclusively from pure apple

juice. Manufacturers of cider vinegar are required to stamp each package with their name, address, and the words "cider vinegar." The manufacture of other kinds of vinegar is permitted, but artificial coloring matter is prohibited in every case. The name and address of the manufacturer and the name of the green fruit from which the vinegar is made must be stamped on the package. The addition of lead, copper, sulphuric or other mineral acid, or other injurious ingredients, is prohibited.

Violators of the laws regarding cider and vinegar are subject to fine or imprisonment, and must also pay the costs of prosecution, including the expense incurred in inspecting and analyzing the samples.

The act of April 3, 1899, creates a State food commission and provides that the governor of the State shall be ex-officio food commissioner. A deputy food commissioner is also provided for. The food commissioner is charged with the enforcement of the laws which have been or shall be passed concerning butter, cheese, imitation butter, imitation cheese, milk, cream, and other dairy products, and vinegar and cider. It is provided that the commission may submit samples to a competent chemist for analysis and that the expense thus incurred shall be taxed as costs in the case. Detailed regulations are prescribed concerning the sale of the foods mentioned in the act. All persons knowingly violating the act are subject to fine.

Nevada.—The intentional sale of the flesh of diseased animals, or other unwholesome provisions, or any poisonous or adulterated drink or liquor is prohibited under penalty of fine or imprisonment.

The sale of milk and butter is regulated in sections 4801–4812 of the General Statutes of Nevada. The intentional sale of impure, adulterated, or unwholesome milk is punishable by fine or imprisonment. The sale of milk from diseased or improperly fed cows is punishable by fine or imprisonment. The sale of skim milk in packages properly marked is permitted.

The manufacture and sale of adulterated or imitation butter is prohibited, unless the same is branded with the word "oleomargarine" in prescribed type. Butter which contains any melted butter or oil thereof is also classed with oleomargarine. Violators of the act are subject to fine.

New Hampshire.—Chapter 269 of the Public Statutes regulates the sale of foods and drugs. The terms foods, drugs, and adulterated as applied to foods and drugs are defined. The act provides that any person who has reason to doubt the purity or genuineness of any article of food which he has purchased may have the same examined by the State board of health without expense. Specified forms of adulteration are prohibited. Violators of the act are subject to fine or imprisonment, or both, and provisions which are found to be unlawfully sold are forfeited.

Chapter 127 of the Public Statutes regulates the inspection and sale of milk and the sale of butter and cheese. It is unlawful to adulterate milk in any manner or to sell adulterated or unwholesome milk or milk from diseased or improperly fed cows. Skim milk may be sold if the vessels are labeled as prescribed in the act. Imitation or adulterated butter and cheese are required to be labeled "adulterated butter," "oleomargarine," or "imitation cheese," as the case may be, in prescribed type. The penalty for violation of the act is fine or imprisonment.

New Jersey.—The act of March 23, 1865, prohibits the sale of diluted, adulterated, or skim milk to cheese and butter factories.

The act of March 22, 1886, requires that adulterated and artificial butter and cheese must be sold from containers which are marked as prescribed in the act. A fine is imposed for violation of the act.

The act of March 14, 1882, provides that skim milk must only be sold from condensers which are marked as prescribed in the act. The sale as pure milk of adulterated or unwholesome milk or milk from diseased or improperly fed cows is prohibited. Violators of the act are punishable by fine.

The act of March 23, 1883, prohibits the sale of adulterated or skim milk in all first-class cities under penalty of fine.

The act of March 14, 1895, prohibits the adulteration of candy and the sale of adulterated candy.

The act of March 22, 1895, prohibits the manufacture and sale of cakes or biscuit in whose preparation egg substitutes have been used, except when a prescribed sign is displayed. A fine is imposed for violation of the act.

The act of April 16, 1896, requires, under penalty of fine, that bread must not be light in weight or adulterated by any impure or foreign substance or material injurious to health.

The act of March 24, 1899, prohibits the sale of horse flesh, except when each separate piece is labeled as prescribed in the act. A fine is imposed for a violation of the act.

Special laws regulate the manufacture of flour and meal products, and prohibit the manufacture and sale as cider vinegar of any substance not made exclusively from pure apple juice, on penalty of fine.

New Mexico.—The laws of this Territory prohibit the sale of any damaged, spoiled, or unwholesome provisions, either for food or drink, without notice to the purchaser, under penalty of fine, and prohibit the adulteration of drugs, medicine, and chemicals, and the sale of such adulterated goods as pure, under penalty of imprisonment. (Rev. Stat. 1897, secs. 1244-1246.)

New York.—The administration of the food laws in the State of New York lies with the State board of health. A general law was enacted in 1893 regulating the manufacture and sale of food and drugs. The terms food and drugs and adulteration, as applied to food and drugs, are defined. The act provides that articles of food which contain no injurious substances may be sold when so labeled as to give a correct idea of their composition. The State board of health is empowered to fix standards from time to time when such standards are not included in the law.

The terms "pure wine," "half wine," and "made wine" are defined, and it is provided that each shall be properly labeled as prescribed.

Special laws have been enacted regulating the manufacture and sale of dairy products. The terms milk, butter, and cheese are defined and standards given for each. The manufacture and sale of adulterated and imitation butter and cheese are prohibited. The sale of adulterated, diluted, skim, and impure milk to butter and cheese factories is prohibited, except that skim milk may be sold as such to skim cheese factories. The manufacture and sale of condensed milk is regulated. The sale of skim milk, as such, is permitted except in the counties of New York and Kings. It is provided that cheese manu-

facturers may use the brand "full milk cheese" and "full cream cheese" when appropriate, and the use of false brands is prohibited.

Special acts regulate the manufacture and sale of vinegar. The addition of lead, copper, sulphuric acid, and other injurious ingredients and articles of coloring matter is prohibited, as well as the sale of vinegar so treated. The sale, as cider vinegar, of the product from any other source than pure apple cider is prohibited. It is required that every package of cider vinegar shall be labeled as prescribed in the act, and false branding is prohibited.

The use of preservatives in dairy products is especially prohibited, and renovated butter is required to be so branded in prescribed type.

The manufacture and sale, as food colors, of poisonous coloring matters is prohibited.

North Carolina.—Chapter 106 of the laws of 1895 require that adulterated and imitation butter must be branded with the names of its ingredients.

Chapter 122 of the acts of 1895 regulates the manufacture and sale of food and drugs. The administration of the act is placed under the board of agriculture. It provides that any one knowingly manufacturing or selling adulterated or misbranded food shall be subject to fine or imprisonment, or both. The term food is defined as including all articles used for food, candy, condiment, or drink, by man or domestic animals, whether simple, mixed, or compound. Labels representing as present any ingredient or substance not being contained in the article labeled are considered a violation of the act. The word adulteration, as applied to foods, is defined.

It is provided that the possession of a written guaranty of purity from the board of agriculture, whether by the wholesaler, packer, manufacturer, or other party from whom the article is procured, shall exempt the seller from prosecution for violation of the act.

It is provided that the admixture with a food of foreign substances which are unwholesome, and the sale of food so treated, shall not constitute a violation of the act when such mixed products are branded as prescribed by the board of agriculture.

North Dakota.—Sections 7639-7642 of the Revised Code provide that adulterated butter and butter substitutes can only be sold when branded as prescribed in the act. Butter made by the addition of substances which cause the casein of the milk to mix with the butter must be branded "patent butter," in the manner prescribed by the act. Violators of the act are punishable by fine or imprisonment, or both. It is required that a printed card, stating correctly the different ingredients, shall accompany each sale of imitation or patent butter or imitation or adulterated cheese.

Sections 7309 and 7310 of the Revised Code prohibit the adulteration of food and drugs and the articles used in their preparation. The intentional sale of adulterated, tainted, decayed, spoiled, or otherwise unwholesome foods and drugs is prohibited. A fine is imposed as penalty for violation of the act.

Ohio.—The act of March 20, 1884, regulates the manufacture and sale of food and drugs. The term food is defined as including all articles used for food or drink by men, whether simple, mixed, or compound. The term drug is defined as including all medicines for internal or external use, antiseptics, disinfectants, and cosmetics. The term adulterate, as used in connection with foods and drugs, is

carefully defined in the act. The addition of foreign substances which are not deleterious to health is permitted only when each package is distinctly labeled as mixed or compound, with the name and percentage of each ingredient therein. Violators of the act are subject to fine or imprisonment, or both, and are required to pay the expense incurred in inspecting and analyzing such adulterated articles.

The act of March 30, 1896, prohibits the sale of corrupted, adulterated, or unwholesome provisions, and the sale of meat from calves which were killed when less than 4 weeks old. The improper feeding of animals intended to be used as articles of human food is prohibited. The penalty for violation of the act is fine, imprisonment, or both.

The manufacture and sale of dairy products are regulated by the acts of April 10, 1889, May 17, 1886, March 7, 1890, May 16, 1894, and March 3, 1896. The sale of adulterated milk or the milk from diseased or improperly fed cows is prohibited. The sale of skim milk is permitted when each package is labeled as prescribed in the act.

The manufacture and sale of adulterated butter and cheese and butter and cheese substitutes are prohibited, unless the same are branded as prescribed in the various acts relating to them. No coloring matter is permitted except in true butter and full milk or full cream cheese. The dairy and food commission is authorized to establish uniform brands for full milk cheese and Ohio State full cream cheese and to furnish the same to creameries on application. The improper branding of dairy products is prohibited.

It is required that condensed milk must be labeled with the name of the brand and the name and address of the manufacturer and must be made from pure unskimmed milk.

The law of May 8, 1896, prohibits the manufacture and sale of adulterated candy. Certain specified adulterants and all other ingredients deleterious to health are prohibited. A fine is imposed as penalty for violation of the act, and the necessary expense incurred in inspecting and analyzing the adulterated candy is added to the fine. The adulterated candy is also forfeited and destroyed, under the direction of the court.

The act of April 29, 1885, provides that all canned food, except that brought from foreign countries, shall be marked to indicate its grade or quality and be labeled with the name and address of the manufacturer or a dealer within the State.

Soaked goods are required to be branded in specified type. Maple sirup is especially mentioned and included in the provisions of the act. A fine is imposed for violation of the act.

The act of March 30, 1896, relates to vinegar. Apple vinegar is defined as a product of pure apple juice, and standards of composition are given. It is required that all vinegar prepared by fermentation and oxidation, without the intervention of distillation, shall be branded "fermented vinegar," with the name of the fruit or substance from which the same is made. All vinegar made wholly or in part from distilled liquor shall be branded "distilled vinegar." The latter must be free from coloring matter, added during or after distillation. In addition to the marks above mentioned, each package must contain the name and residence of the manufacturer and the brand of the vinegar. Violators of the act are subject to fine or imprisonment and must pay, in addition, the costs incurred in inspecting and analyzing the vinegar. Persons manufacturing cider vinegar in quantities

less than 25 barrels in any one year, may mark the same "domestic cider vinegar," with the name of the manufacturer and date of preparation.

Section 7082 of the Revised Statutes prohibit certain specified adulterants in intoxicating liquors and the sale of such adulterated articles. The penalty for violation of the act is fine, imprisonment, or both, and the expenses of inspecting and analyzing the sample are added to the penalty. The addition of active poisons to intoxicating liquors, or the sale of the liquors so treated, is punishable by imprisonment in the penitentiary. Labels are prescribed for the packages containing the liquors.

Section 7081 prohibits the adulteration of whiskey, wine, grape juice, or other liquor, and the sale of such adulterated article, knowing it to be adulterated, on penalty of fine.

The act of March 24, 1889, relates to the manufacture and sale of wine. Pure wine is defined as the fermented juice of undried grapes, without the addition of water, sugar, or any form of substance whatever. When pure white crystallized sugar or the necessary substances for clarification are added, the substance may be branded "wine." It must then contain at least 75 per cent of pure grape juice and be free from artificial flavoring. If less than 75 per cent of pure grape juice be added and the wine be otherwise pure, or if distilled spirits be added, the article may be branded "compound wine," or the word "compound" may precede the name of the wine, like "compounded sweet catawba," or "compounded port wine." No more than 8 per cent, by volume, of distilled spirits may be added in the preparation of compounded wine. The proper designation of the wine "compounded wine," "wine," or quote "pure wine" must be placed on each package in the manner prescribed in the act, and all invoices of sales must designate the article by its proper name. Violators of the act are subject to fine, imprisonment, or both.

Special acts prohibit the improper use of brands, stamps, labels, or trade-marks, and forging of the same.

Oklahoma.—Chapter 25 of the laws of 1890 prohibit the adulteration of any article of food, drink, drug, medicine, spirituous or malt liquor, or any article useful in compounding any of them. Violation of the act is made a misdemeanor.

Oregon.—The laws of 1893 regulate the manufacture and sale of food and drink, and place the administration of the same under the dairy food commissioner. The terms food, drug, and adulteration, as relating to them are defined.

The addition of harmless ingredients to food is permitted when the article so prepared is labeled as provided in the act. Hotels, restaurants, etc., using mixtures or compounded goods are required to state the same on all bills of fare, and when no bill of fare is used on a prescribed placard. The manufacture and sale of process butter are permitted when the article is branded as prescribed in the act, and regulations are given concerning the manufacture and sale of vinegar, oleomargarine, butterine, and other imitation dairy products, jellies, jams, and fruit sauces, requiring that in each case the labels or placards shall contain a statement giving the names of foreign substances when they are present.

Pennsylvania.—The act of June 7, 1897, prohibits the sale of milk adulterated with preservatives, coloring matter, or other injurious

substances. A violation of the act is punishable by fine, imprisonment, or both.

The act of June 18, 1897, relates to the manufacture and sale of vinegar. It is provided that all packages containing vinegars must be branded either "fermented vinegar" or "distilled vinegar," and in the former class with the name of the fruit or substance from which it is made. Apple or cedar vinegar must be made exclusively from apple juice. Fruit vinegar must be made wholly from grapes, apples, or other fruit. Distilled vinegar shall contain no coloring matter other than that imparted to it by the process of distillation. It is provided that no substance shall be added to vinegar except such spices as are necessary for flavoring, and no spices shall be used which color the product. Violation of the act is punishable by fine, imprisonment, or both. The costs of the prosecution are added to the penalty, and foods illegally sold or offered for sale are confiscated.

The act of June 23, 1897, prohibits the sale of filled cheese. Cheeses made from milk or cream are classified as full cream, three-fourths cream, half cream, one-fourth cream, and skim cheese, according to the composition. All cheese must be appropriately branded as prescribed in the act. A fine is imposed for violation of the act. The costs are included in the penalty, and adulteration, or improperly branded cheese is confiscated.

The act of May 5, 1899, prohibits the manufacture and sale of imitation butter or butter substitutes, unless the same be free from color and branded as prescribed in the act. A placard is specified also, and must be exhibited in plain sight in all stores and vehicles from which these substances are sold. Violators of the act are punishable by fine, imprisonment, or both.

The act of May 4, 1899, prohibits the manufacture and sale of boiled or process butter, unless the same be labeled "renovated butter" in the manner prescribed in the act. The penalty for violation may be fine or imprisonment, or both. All process butter illegally sold is subject to confiscation.

The adulteration of candy is also prohibited and the use of imitation dairy products and adulterated dairy products in charitable and penal institutions in the State.

Rhode Island.—Chapter 125 of the Public Statutes provides that all butter firkins or tubs shall be marked with their correct weight, and provides a penalty of \$5 for the sale of such an article which is not so branded. It is further provided that each package of imitation butter or butter substitute shall be branded "oleomargarine" in the manner prescribed by the act. The sale of imitation butter or butter substitutes not so branded is punishable by fine.

Chapter 127 of the Public Statutes prohibits the sale of milk from diseased or improperly fed cows on penalty of fine. The sale of adulterated milk is also prohibited under penalty of fine for the first offense and fine and imprisonment for subsequent convictions. Standards for the composition of milk are included in the law.

South Carolina.—No. 96 of the Laws of 1896 prohibits the sale of unclean, impure, unwholesome, or skim milk, except that skim milk and butter milk may be sold when labeled as prescribed in the act.

The manufacture and sale of butter and cheese substitutes are permitted only when no coloring matter is added to imitate or resemble the color of butter and cheese and when branded "substitute for but-

ter," or "substitute for cheese," as the case may be, in the manner prescribed in the act. The mixture with foreign fats of butter or cheese in such a manner as to give the substance a yellow color is prohibited. Hotels, restaurants, etc., using imitation butter or cheese, or food prepared with the same, are required to post a placard with the words "imitation butter used here," or "imitation cheese used here," in prescribed type. Violation of this act is punishable by fine.

No. 49 of the Laws of 1885 regulates the manufacture and sale of foods and drugs. The admixture of harmless substances which are commonly used as foods is permitted when the same is made known to the buyer. Violators of the act are subject to fine or imprisonment.

South Dakota.—The act of February 28, 1899, prohibits the sale of adulterated food unless the package containing the same bears a label giving in prescribed type the name and address of the manufacturer and the word "adulterated." Various chapters of the act give special regulations regarding jellies, lard, foods containing alum, vinegar, honey, spices and condiments, and candy. The penalty of fine or imprisonment is imposed for a violation of the act.

Tennessee.—Chapter 45 of the laws of 1897 prohibits the manufacture and sale of deteriorated, adulterated, or misbranded articles of food. The State board of health is charged with the administration of the law. The terms "food," "drink," "adulterated," and "misbranded articles" are defined. It is provided that a knowledge of the impure character of the goods sold must be proven before a dealer can be convicted of a violation of the law. Violations of the act are punishable by fine or imprisonment, or both.

Texas.—A general law regulating the manufacture and sale of drugs and medicines is in force in this State, but no food law has been enacted. (Rev. Laws, 1897, sec. 4319.)

Utah.—Chapters 4285-4290 of the Revised Statutes of 1898 prohibit the manufacture and sale, as pure, of deteriorated, decayed, or adulterated food and drugs. It is provided that a lack of knowledge of the character of the goods sold shall exempt a dealer from liability.

Section 1726 of the Revised Statutes prohibits the manufacture and sale of adulterated drugs, medicines, and pharmaceutical preparations, and provides that anyone selling the same with intention to defraud the purchaser, or willfully adulterating any such preparation, shall be subject to a fine, in addition to the costs incurred in the investigation and trial.

Chapter 34 of the Laws of 1899 provide that no dairyman shall feed improper food to cows which are kept for the purpose of furnishing milk, to be sold as such for the manufacture of butter or cheese. Violation of the act is considered a misdemeanor.

Sections 4284 and 4285 of the laws of 1899 prohibit the manufacture and sale of adulterated vinegar, or the sale as cider vinegar of vinegar made wholly or partially from any other product. Directions are also given for the branding of vinegar barrels, etc.

Special enactments regulate the sale of milk and manufacture and sale of butter and cheese and butter and cheese substitutes.

Vermont.—The sale of diseased, unwholesome, and corrupted provisions for food is prohibited. Special laws regulate the sale of milk, cheese, butter, lard, grain, meal, maple sirup, honey, and candy. No general food law and no pharmacy law have been enacted. (Rev. Stats. 1894, secs. 4354, 4373, 5075.)

Virginia.—The sale of adulterated or skim milk as whole milk to cheese or butter factories is prohibited. The manufacture and sale of adulterated butter and cheese and butter and cheese substitutes, and the serving of these products and food prepared with the same, in hotels, restaurants, etc., are prohibited. (Sess. Laws 1897, p. 5.)

Laws have also been enacted prohibiting the adulteration of butter, flour, cheese, vinegar, and candy. (Sess. Laws 1891, p. 840.)

The sale of imitation butter and butter substitutes is prohibited except when they are free from added color and when under such prescribed conditions as will advise the purchaser of the true character of the article. (Sess. Laws 1897, p. 147.)

Washington.—The law of March 13, 1899, regulates the sale of food. The term "food" is defined and "adulteration" as applied to foods. It is provided that mixtures with food materials of compounds or substances recognized as ordinary articles or ingredients of articles of food, are permissible when each package is distinctly labeled "mixture" or "compound," and with the name and percentage of each ingredient therein, and when no ingredient present is injurious to health. The manufacture and sale of food adulterated within the meaning of the act is punishable by fine or imprisonment, or both, and the costs of the prosecution are added to the penalty.

The act of March 7, 1899, prohibits the sale to creameries and cheese factories, as whole milk, of adulterated, skim, impure, or unwholesome milk. The sale of milk which has been treated with preservatives and milk from diseased or improperly fed cows is also prohibited. The State dairy commissioner is authorized to furnish stencils bearing a suitable device or motto with the words "Washington State full cream cheese" to creameries requesting them. Skim cheese and cream cheese are defined and the improper branding of cheese is especially prohibited.

Dealers in adulterated butter and butter substitutes and hotels and boarding houses furnishing the same to their guests are required to make the same known by displaying a sign in a conspicuous place. The sale of filled cheese is prohibited.

Chapter 163 of the Laws of 1891 prohibits the manufacture and sale of adulterated drugs and medicines. Violation of the act is punishable by fine and the adulterated articles are confiscated.

West Virginia.—The laws of West Virginia prohibit the intentional sale of diseased, corrupted, or unwholesome provisions on a penalty of fine or imprisonment.

The adulteration of foods and the intentional sale of adulterated foods and drinks are prohibited. The manufacture and sale of adulterated butter and cheese and butter and cheese substitutes are regulated by special enactment.

Wisconsin.—The statutes of 1898 prohibit the intentional sale of diseased, corrupted, or unwholesome provisions without making the same fully known to the buyer on penalty of fine or imprisonment.

The adulteration of foods and drugs is also prohibited on penalty. The terms "food," "drug," and "adulteration," as applied to each, are defined.

It is provided that canned goods shall be labeled with the grade or quality of the same, together with the name and address of the packers.

It is provided that baking powders that contain alum in any form

or shape shall be labeled in prescribed type with the name and address of the manufacturer and the words "This baking powder contains alum."

The sale of diseased apiaries, the honey from the same, and the appliances used therein is prohibited on penalty of fine or imprisonment.

The sale of diseased meat and the killing of diseased animals are prohibited on the penalty of fine or imprisonment, or both.

Standards for the composition of vinegar are given and regulations for the manufacture and sale of vinegar are prescribed. Cider vinegar is defined, and the sale of products of any other source as cider vinegar is considered a violation of the law. Directions are given for the branding of vinegar, and misbranding is prohibited.

The sale of impure or adulterated milk and cream, and the sale of skimmed milk, except under prescribed conditions, are prohibited. The sale of milk from diseased or improperly fed cows is prohibited. It is provided that no foreign substance whatever shall be added to milk, except that sucrate of lime may be added to pasteurize the milk for the purpose of restoring viscosity, if such addition is so indicated on the label as to advise the purchaser of the fact. The manufacture and sale of skimmed-milk cheese is permitted under prescribed conditions. The manufacture and sale of adulterated butter and butter substitutes are prohibited, except when free from coloring matter and branded as prescribed in the act. Retail dealers must also mark every open tub with a placard bearing the word "oleomargarine" in prescribed type, and have a placard with the words, "oleomargarine sold here," or "butter sold here," placed in a conspicuous place in every store or vehicle from which the adulterated butter or butter substitute is sold. It is provided that no imitation butter or cheese shall be used in any charitable or penal institution. The sale of process butter is prohibited, except when the package is branded with the words "renovated butter" and every open tub bears the placard with the same words in prescribed type.

Wyoming.—Sections 5108 to 5110 of the Revised Statutes for 1899 prohibit the intentional sale of the flesh of diseased animals and of other tainted, decayed, or unwholesome foods and drugs. The adulteration of foods and drugs, including beverages, with the intention of selling the same as pure is prohibited, and also the sale of adulterated foods and drugs as pure. The penalty for the sale of deteriorated and unwholesome provisions is a fine, and the sale of adulterated foods and medicines is punishable by fine or imprisonment, or both.

FEDERAL LAWS.

The act of August 30, 1890, providing for an inspection of meats for exportation, prohibiting the importation of adulterated articles of food or drink, provides that the Secretary of Agriculture shall cause to be made a careful inspection of salted pork and bacon intended for exportation to determine whether the same is wholesome, sound, and fit for human consumption, whenever the laws, regulations, or orders of the Government of any foreign country to which such meat is to be exported shall require inspection thereof. It is unlawful to import into the United States any adulterated or unwholesome food or drug, or any vinous, spirituous, or malt liquors, adulterated or mixed with

any poisonous or noxious chemical, drug, or other ingredient injurious to health. Violators of this act are subject to both fine and imprisonment. (Rev. Stats. U. S., chap. 839, p. 414.)

The act of August 2, 1886, defining butter, imposing a tax on oleomargarine and regulating the sale of the same, provides that certain manufactured substances, certain extracts, and certain mixtures and compounds shall be known and designated as "oleomargarine." Manufacturers of oleo shall pay a special tax of \$600, retail dealers shall pay \$48, and every person who sells oleomargarine in less quantities than 10 pounds at one time shall be regarded as a retail dealer in the said compound. Any person who fails to produce the necessary license and pay the said tax is liable to a fine of not less than \$1,000 nor more than \$5,000.

All oleo shall be packed in firkins, tubs, or other wooden packages, each containing not less than 10 pounds. Every manufacturer of oleomargarine is required to file with the collector of internal revenue of the district in which his manufactory is located such notices, inventories, and bonds; shall keep such books and render such returns of materials and products; shall put up such signs and affix such numbers to his factory, and conduct his business under the surveillance of officers of the Commissioner of Internal Revenue. (Revised Stats. U. S., 1887, chap. 840, p. 210.)

Under the provisions of the act of March 3, 1891, providing for the inspection of live cattle, hogs, and the carcasses and products thereof, which are the subjects of interstate commerce, the Secretary of Agriculture is empowered to make an inspection of all cattle intended for export to foreign countries, to ascertain if such cattle are free from disease. He shall also inspect all live cattle, the meat of which is intended for exportation, to ascertain whether they are healthy, sound, and wholesome.

All cattle, sheep, and hogs which are subjects of interstate commerce prior to slaughter shall be inspected when the carcasses or products of the same are intended to be transported and sold for human consumption in any other State or Territory or the District of Columbia. (Rev. Stat. U. S., 1891, chap. 555, p. 1089.)

The act of June 6, 1896, defining cheese, and also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of "filled cheese," provides that the word "cheese" shall be understood to mean the food product known as cheese, made from milk or cream, and without the addition of butter or any animal, vegetable, or other oils or fats. "Filled cheese" is defined as substances made of milk or skimmed milk, with the admixture of butter, animal oils, vegetable or any other oils, or compounds foreign to such milk, and made in imitation or semblance of cheese. A tax of \$400 per annum on manufacturers, wholesale dealers \$200 per annum, retail dealers \$12 per annum, is imposed. All filled cheese shall be packed in wooden packages only and properly branded or labeled in type not less than 2 inches in length. Retail dealers in filled cheese shall only sell from original packages. All retail and wholesale dealers in filled cheese shall display in a conspicuous place in their salesroom a sign bearing the words "Filled cheese sold here."

All filled cheese, as herein defined, imported from foreign countries shall, in addition to import duty, pay an internal-revenue tax of 8 cents per pound.

Any violation of this act is punishable by fine or imprisonment, or both. (Rev. Stat. U. S., 1896, chap. 337.)

Section 35 of the act of June 13, 1898, provides that the words "mixed flour" shall be understood to mean the food product from wheat, mixed or blended, in whole or in part, with any other grain or other material, or the manufactured product of any other grain or other material than wheat.

Every person, firm, or corporation before engaging in the business of making, packing, or repacking mixed flour shall pay a special manufacturer's tax of \$12 per annum. Every package shall be plainly marked or labeled "mixed flour," and a card shall be affixed to said package, on which shall be printed the names of the ingredients composing the same. Penalties are provided for selling or offering for sale the said product, unless packed and branded in accordance with the provisions of the act, and is construed to be a felony.

The barrels or other packages in which mixed flour may be packed shall contain not to exceed 196 pounds, and upon its manufacture and sale a tax of 4 cents is levied on every barrel offered for consumption. (Rev. Stats. U. S., 1898, chap. 448, p. 468.)

FOREIGN LAWS.

Austria.—The use of colors which contain any metal except iron and the use of gamboge, piric acid, and all aniline derivatives for the purpose of coloring food and food products is prohibited.

The sale of food which has been prepared in vessels coated with poisonous colors or stored in receptacles so coated is prohibited. The importation and sale of wine colored with aniline dyes is prohibited. Food and food products which are themselves white or colorless (confections, beverages, etc.), but which are ordinarily artificially colored, may be colored by prescribed regulations.

Wrappers for confections, coffees, and other varieties of food must either be white or prepared from material which is naturally colored. If a wrapper which is artificially colored be employed, a second wrapper of the character above described must be placed between it and the inclosed product. The use of wrappers containing copper salt is especially prohibited.

If antimony sulphid enters into the composition of vessels which are used in connection with food products, it must be so prepared that no antimony is dissolved by a dilute solution of tartaric acid. Copper and brass vessels must not be used in the preparation of food unless the inner side be coated with lead-free tin. The addition of fluorids to food is specially prohibited, as is also the addition of salicylic acid to wine. It is provided that the term "butter" shall be understood to mean the exclusive product of milk or cream. Fats from all other sources must be designated as margarine, lard, or compound lard, as the case may be. Margarine butter is required to be sold in molded prints and labeled as to its true character. Every receptacle containing compound lard must be distinctly labeled as in the case of margarine butter.

Belgium.—A general law prohibits the adulteration of butter, sugar, flour, lard, chicory, cocoa, chocolate, and wine. All butter containing other additions than the fat obtained exclusively from milk or cream with or without the addition of coloring matter or salt must be

designated as margarin. Margarin must not contain more than 5 per cent of butter fat and must not be artificially colored. The minister of agriculture may prescribe the maximum color permitted in margarin. When not sold in packages, margarin must be molded in cubical form, with the word "margarin" impressed thereon, together with the name of the manufacturer or dealer. It is further required that margarin shall be fresh and made from the fat of healthy animals. It is expressly prohibited to add glycerin to butter and margarin.

Flour must be manufactured from grain which is sound and in good condition and which has been thoroughly cleaned, and the words "flour" and "bread" must be used exclusively to denote the product. The product of any other cereal must be designated by its proper name—"rye flour," "rye bread," etc.—and the sale of flour which is adulterated with mineral matter is prohibited.

Sugar must not be deteriorated in any manner, and the addition of preservatives and the presence of fungicides are forbidden. All receptacles, whether bags, barrels, etc., must be plainly marked with the name of the manufacturer or dealer. The word "sugar" and synonymous terms shall refer only to the product obtained from the juice of sugar cane, sugar beet, and similar plants. Mixtures of sugar cane with other materials, such as dextrose, which are used for sweetening purposes, must be properly labeled. Any mixtures or additions with cane sugar and other material must be so labeled as to inform the purchaser of their true contents. It is provided that white sugar must not contain more than 0.2 per cent of mineral substance, and raw sugar not more than 2.5 per cent of mineral substances, and glucose not more than 0.8 per cent of mineral substances. Glucose must not contain more than 0.05 gram of free acid (calculated to sulphuric acid) per 100 grams of dry matter, nor appreciable quantities of oxilates, oxalic acid, arsenic compound, lead, zinc, or barium. Chicory is understood to be the product of chicory root, in its natural condition or by appropriate treatment, such as roasting, powdering, drying, etc., and must not contain more than 15 per cent of water (dried at 100° C.). When put up in packages it must be marked with the weight of the contents thereof and may contain an addition of saccharine matter not exceeding 2 per cent of the total substance. All packages containing chicory must bear the name of the packer or dealer or some registered mark.

It is forbidden to expose for sale, to hold or transport for sale or for delivery as wine, any wine to which foreign substances have been added. All casks in which wine, liquors, and vinous beverages which are exposed for sale or delivered must bear the name of the firm, together with the address or the registered mark of the maker or seller.

Denmark.—This country has confined itself almost entirely to laws prescribing the method for the manufacture of wine, cognacs, rums, etc. It is provided that no coloring matter shall enter into wine, beverages, etc., of any kind, unless the same is distinctly and plainly printed on the label of the bottle, cask, or receptacle containing the same. Wines which receive an addition of water, and which fulfill the required percentage of extract, etc., may be blended with other wines of normal composition without regard to the extract content of the blend so produced. When alcohol is introduced into a dry wine, it must be so indicated on the label, but this does not apply to the alcohol necessary for ordinary cellar manipulation. When so employed, the

alcohol must be fully refined, and not less than 93.25 per cent by volume, and the amount added must not exceed 2.5 liters for 240 liters of wine. All wine and liquors imported from other countries must conform to the customary composition above prescribed.

Oleomargarine must be branded and put up in prints plainly labeled as to the true character of the goods and must not contain more than 50 per cent of butter fat, and the shade of color permissible is prescribed.

England.—Margarine filled cheese, etc., must be conspicuously marked on the tops and sides of each package with the words "margarine" or "margarine cheese," as the case may be. The former must not contain more than 10 per cent of butter fat. Adulterated or impoverished butter other than margarine must be in packages so marked as to indicate the exact nature of the contents of the package. The addition to foods of coloring materials and preservatives which are harmless in the quantity employed is permitted. Packages, tins, vessels, or other receptacles containing condensed skim milk must be conspicuously labeled so as to convey to the purchaser the information of the class of goods and the contents thereof.

A general law defines what constitutes pure food and drugs and provides regulations for its enforcement.

France.—The term "butter" shall be applied only to products made exclusively from milk or cream. All other fat materials having the appearance of butter must be sold as margarin, and must not contain more than 10 per cent of butter fat. All packages containing oleomargarine must be indelibly branded as to their true character, together with the percentage of each constituent present and the amount thereof contained in such compounds. In every case the name and address of the manufacturer must be legibly branded on the receptacles containing said margarin. Every bill, letter, and package bearing any relation to the sale or transportation of margarin must be plainly stamped or stenciled with the word "margarin."

Foods and food products must not be colored with any mineral substance, except that prussian blue, ultramarine, chalk, and ocher may be used with confections and all similar products. It is provided that all confections when sold in packages must bear the name and address of a dealer or manufacturer. The use of litharge, lead acetate, and similar compounds for clarifying saccharine products and fermented beverages is forbidden.

Wine is defined as the fermented juice of the grape treated in no way except by the ordinary cellar manipulation. The introduction of sulphuric acid, hydrochloric acid, boric acid, nitric acid, and analogous substances in wine or the addition of coloring matter is expressly prohibited. Wine must not contain more than 0.1 gram of sodium chlorid per 100 cubic centimeters, or more than 0.2 gram of potassium sulphate. A general law regulates the commerce of fertilizers, butter, and wines especially; it also applies to all articles of merchandise of whatever nature. Any misrepresentation concerning the nature, quality, or quantity of articles embraced within the provisions of this law is a penal offense. It is further provided that all cans and receptacles of every nature containing food must not be coated with alloy and must not be soldered with any alloy that contains more than 10 per cent of lead or 0.01 per cent of arsenic. It is expressly stipulated that only lead-free tin may be used as wrappers for food material.

Germany.—A new law, effective April, 1901, regulates the preparation, importation, and sale of meat and meat products. Under its provisions the importation, except in "free ports," of meat in hermetically sealed cans and similar receptacles and of macerated meat of all descriptions, is unequivocally prohibited. It further provides that fresh meat must be imported in the entire body or in halves, and must be so dressed that the breast, diaphragm, lungs, heart, and kidneys, and in the case of cows, also the udder, must retain their natural position in connection with the body. Preserved and canned meat can only be imported when the method of preparation or preservation to which it has been subjected is such as to add to or produce in the meat no injurious substances. Corned beef, ham, bacon, and casings are exempted from the above provisions, provided that the corned beef is not imported in pieces weighing less than 8.8 pounds. Meat which has been preserved by processes which will enable it to retain all of the characteristics of fresh meat, is subjected to the restrictions applied to fresh meat. The above regulations are to remain operative until December, 1903, or until such other legislation shall be had along the above-indicated lines.

Horseflesh can only be imported when so designated in the German language as to indicate, without ambiguous meaning, its true nature.

Butter substitutes, filled cheese, and compound lards must be branded as to their true character. Every package must be marked in a conspicuous place, indicating this fact. All prints must be cubical in form and stamped in sunken letters "margarine." Coffee substitutes must be inclosed in packages bearing a label stating the chief components in combination with the word "kaffe." Coffee substitutes and mixtures of coffee can be sold only in packages which are boldly marked which will convey to the purchaser a full knowledge of the nature of the compound. It is forbidden to manufacture, sell, or hold for sale machines for the preparation of artificial coffee beans. It is expressly prohibited to manufacture and sell or offer for sale foods and beverages containing artificial sweetening material. It is prohibited to add to wine beverages containing soluble aluminum salts, barium compounds, boric acid, glycerine, kermes, impure alcohol, glucose, and aniline dyes. The use of "sugar water" and "pressed" grapes, sugar and wine yeast, raisins, currants, and other sweetening materials than sugar cane or dextrose is prohibited unless the goods are so labeled as to indicate such additions. Other laws prescribe the character of cooking utensils and receptacles for foods and vessels used for preparation of beverages and fruit juices, and none of such receptacles, etc., shall contain over 10 per cent of lead in any part. Snuff, chewing tobacco, and cheese must not be wrapped in foil containing more than 1 per cent of lead.

Practically all of the above-mentioned laws apply to Prussia.

Hungary.—The manufacture and sale of adulterated wine is prohibited. Wine is considered adulterated when not made exclusively from the grape, with such additions as are necessary in ordinary cellar manipulation. It is prohibited to misrepresent the location in which a wine was made or the variety of grapes used in the manufacture thereof. The addition to must or wine of material such as saccharin, glycerin, salicylic acid, flavoring extracts, ethereal oil, or other liquors, and of all vegetables, minerals, and aniline colors, with the exception of safflower, is expressly prohibited.

Carbonated wines can be sold only under the proper definition,

which must appear on the face of all receptacles containing any such carbonated wine, legibly stamped, printed, or stenciled thereupon.

Italy.—The term "butter" must be used only to designate fatty materials obtained from milk and cream by mechanical operations. Butter must contain no injurious coloring matter; no added substances such as foreign fats, flour, sirup, chalk, plaste r, and soluble glass; no chemical preservatives are permitted to be added other than common salt and borax, and the fat content of the butter must not be less than 18 per cent. All edible fats, including butter of animal or vegetable origin, must be in a good state of preservation, and if of animal origin must have been prepared from a healthy animal. Cheese must not contain any substance which is not obtained from milk and cream other than salt and harmless coloring matter. The sale of eggs which are stale, packed, tainted, or colored with injurious substances is forbidden. Cereals and milk products must be in a good state of preservation, free from mold, weed seed, and other impurities. The addition of alum, copper sulphate, zinc sulphate, talc, chalk, plaster, and other impurities of every kind and character is forbidden. Sugar is understood to mean the product of the sugar cane or sugar beet, and must not contain more than 5 per cent of reducing sugar. Sirups, confections, marmalades, etc., must not be fermented nor in any way deteriorated, and must not contain any other fruit products than that which is represented to be present.

Beer must be made exclusively from malt of barley or other cereals, with the addition of hops, yeast, and water. The sale of stale, spoiled, or deteriorated beer from any cause is prohibited. The sale of distilled liquors containing hydrocyanic acid and all other mineral acids or medicinal drugs is prohibited. The term "vinegar" is applied exclusively to the fermented product of wine, and must contain not less than 4 per cent of acetic acid; there must be no addition of coloring matter or other substances, and the sale of the said product which has become spoiled or deteriorated on account of age is prohibited. The sale of coffee substitutes and adulterated coffee or coffee colored by injurious substances is prohibited. Tea must contain no addition of any foreign substance whatever. Chocolate must receive no additional chalk, ocher, or other mineral matter injurious to health. It is also provided that prepared meats shall be inclosed in a wrapper on which shall be printed the kind of animal from which the meat was prepared; it is also required that all meats, bloods, etc., used in the preparation of sausage and other meat products must be in a good state of preservation. The addition of coloring matter to fish, mollusks, and crustacea in order to give stale articles a fresh appearance is a violation of law.

Roumania.—A general law prohibits the adulteration of food by the introduction of foreign material, by removing characteristic ingredients, or by any change of composition or character whereby the food product is made less nutritious, less wholesome, or cheaper. The sale of unripe or decayed fruits or cereals or of unwholesome food of any kind is prohibited. The addition of drugs to food is prohibited, except that materials ordinarily used as foods may be used by druggists for the purpose of preparing medicine in their ordinary form; the use of injurious coloring materials is prohibited both as a mixture with foods and in coloring wrappers. Tin receptacles designed to contain food of any character must not be coated with alloy containing more than 1

per cent of lead or more than 0.01 per cent of arsenic. Water used in the preparation of brandy and other alcoholic beverages must be pure, clear, and free from unwholesome ingredients, and the use of injurious colors and aromatic essences in the manufacture of brandy is prohibited.

Alcoholic beverages must not contain an excessive amount of aldehydes afurfural, methyl alcohol, or fusel oil; the addition of aniline derivatives and alkaloids and the ethers of the various capronic and caprylic acids is strictly forbidden. Wine to conform to the prescribed standard must be a product of the alcoholic fermentation of grape must, without addition of any description. New wines whose fermentation is not completed must contain at least 1.55 gram extract per 100 c. c., exclusive of sugar. Wines which do not come within the standard above given can not be sold as beverages and are held to be adulterated. Beer must be prepared exclusively from malted barley, hops, yeast, and water by alcoholic fermentation. If a portion of the barley is replaced by any other material, the product must be designated by a name indicating that fact. Beer may vary in color from dark yellow to clear brown; it must have a characteristic odor and taste and be charged with carbon dioxide and must contain from 2.5 to 6 per cent of alcohol, from 3.5 to 8 per cent of extract, from 2.5 to 4.9 per cent of dextrin, and from 0.5 to 3 per cent of maltose. It must contain no added coloring matter except caramel and that naturally extracted from malt. Vinegar must not contain more than 8 per cent of acetic acid nor less than 4 per cent, and the manufacture of vinegar from crude alcohol is expressly forbidden. Cheese must contain nothing but the normal casein proteids, butter, fat, milk sugar, and mineral bodies obtained in its preparation from pure milk. Its reaction must be neutral or acid. Any product not containing the above-mentioned ingredients and offered for sale as cheese is held to be adulterated. Butter is defined as the product of milk or cream from the cow or buffalo; it must be white or yellow in color, of uniform consistency, and must contain a small amount of casein, milk sugar, lactic acid, unorganized bodies, etc., and must contain at least 82 per cent of fat. The sale of butter prepared from adulterated milk or from the milk of diseased or improperly fed cows is prohibited.

Cereals which are unripe, decayed, or decomposed, covered with fungus affected by vegetable or animal parasites, or mixed with other varieties of cereals, can not be sold for human food, nor shall flour or meat prepared from the above be offered for sale as food for human consumption. The sale of flour which has deteriorated in any way or which contains more than 18 per cent of water is forbidden. The adulteration of coffee with any foreign substances, or of coffee from which any ingredient has been extracted, is prohibited; the mixture with coffee of artificial coffee beans, or the sale of artificially colored coffee, or of coffee treated with any oil, roasted after the addition of sugar, or which has spoiled or deteriorated in any way, is forbidden. However, the sale of coffee substitutes is permitted under appropriate designation, such as "chicory," "barley coffee," and "fig coffee."

All forms of preserved meat must be free from liver, kidneys, lungs, and viscera, and consist entirely of the flesh of edible domestic animals, game, and birds put up while fresh.

The coloration of preserved vegetables and fruits with mineral and aniline colors is forbidden, as is also the coloration of preserved meats.

Switzerland.—The term "butter" shall be used only with reference

to the product of fresh milk and cream. The fat content of fresh butter must be at least 82 per cent, and butter shall not form a part of the name of any product containing fat from other sources than pure milk. All flour and meal must be so marked as to indicate the grain from which it is prepared, and must be free from mineral impurities, fungi, and weed seed. Canned vegetables must not contain over 10 per cent of copper salt per 100 grams of fresh food. The addition of artificial colors to meat or meat products, wines and similar beverages, beer, distilled and wood vinegar, coffee, tea, chocolate, condiments, fruit juices, and bakers' products supposed to contain eggs, is prohibited. The introduction to food of antimony, arsenic, barium, lead, cadmium, mercury, zinc, and tin is expressly prohibited, and all articles of food found to contain any of the above substances shall be confiscated, and the dealer or manufacturer thereof punished.

DECISIONS OF COURTS AFFECTING PURE FOOD.

To sell "separator skimmed milk" as skimmed milk is an indictable offense under act of June 26, 1895, commonly known as the pure food law. (*Commonwealth v. Hufnal*, 4 Pa. Sup. Court, 301.)

A mixture compounded of coffee and a certain amount of chicory, wheat, rye, peas, dried and browned, and labeled best "Rio," "Prime Rio," or "Broken Java," and the words "Coffee Compound," not showing the nature of the mixture, can not be sold in Pennsylvania; it is an adulteration within the meaning of the pure food law. (*In re Stephens & Wildmar*, 5 Pa. Repts., 104.)

Section 8 of the act of 1895, which prohibits the manufacture or sale of adulterated articles of food or drink, and prescribing what shall be deemed adulterated, and forbidding any person from knowingly offering for sale cheese which is falsely labeled, was tested in the case of *People v. Snowberger* (113 Mich. Repts., 86).

Respondent was convicted under an information charging that he offered for sale and sold an adulterated article of food, to wit, a quantity of mustard which was adulterated and colored with tumeric, whereby the mustard as an article of food was damaged and its inferiority concealed. *Held*, it is competent for the legislature under the police power to provide for the public health by making it an offense punishable by fine and imprisonment to sell adulterated food or drink, irrespective of the seller's knowledge of the adulteration; that proof of guilty knowledge or intent is not essential to the conviction of one who sells adulterated food, and held to be constitutional.

The provisions of section 2, chapter 318, Statutes of Massachusetts, 1886, apply to the keeper of a hotel who supplies milk to his guests to be drunk by them on the premises.

A principal is responsible under the statute for a sale made by his servant, although he was not present and did not consent to or know of the particular sale, the servant not acting in violation of orders. (*Commonwealth v. Vieth*, 155 Mass., 216.)

Under the law of 1891 relating to the sale of imitation butter in Minnesota it has been held by the supreme court to be a legitimate exercise of the police powers of the State to arrest and imprison any person violating the provisions of said law in accordance with the penalties prescribed therein. That it is a criminal offense and not a mis-

demeanor to have in possession or offer for sale as butter any imitation article thereof. (*State v. Wiedman*, 56 N. W. Reporter, 688.)

The provisions of chapter 12, Laws 1891, "regulating the manufacture and sale of lard and of lard compounds and substitutes and of foods prepared therefrom," are valid as a legitimate exercise of the police power of the State. (*State v. Asleson & Barrett*, 62 N. W. Reporter, 220.)

The decision of the United States Supreme Court, favorable to the Massachusetts anticolor law, has been reaffirmed in cases tried in the States of Pennsylvania and New Hampshire. The former absolutely prohibited the sale of oleomargarine, and New Hampshire permitted the sale only when colored pink.

In disposing of the case the court said:

It is within the power of the State to exclude from its markets any compound manufactured in another State which has been artificially colored or adulterated so as to cause it to look like an article of food in general use, and the sale of which may, by reason of such coloration or adulteration, cheat the general public into purchasing that which they may not intend to buy. The Constitution of the United States does not secure to any one the privilege of defrauding the public. The deception against which the statute of Massachusetts is aimed is an offense against society, and the States are competent to protect their people against crime or wrongs of more serious character. And this protection may be given without violating any law secured by the national Constitution and without interference of the authority of the General Government. A State enactment forbidding a sale of deceitful imitations of articles of food in general use among the people does not abridge any privilege to secure citizens of the United States, nor in any just sense interfere with the freedom of commerce among the several States.

The judiciary of the United States should not strike down a legislative enactment of a State, especially if it has direct connection with social order, the health and morals of its people, unless such legislation plainly and palpably violates some right granted or secured by the National Constitution, encroaches upon the authority delegated to the United States for the attainment of objects of national concern. (*Plumley v. Commonwealth of Massachusetts*, 115 U. S., 13.)

On trial for delivering skimmed milk to a cheese factory: The State may prove other independent similar deliveries by the accused near the same time in order to show guilty knowledge. (*Bainbridge v. State*, 30 Ohio St. Repts., 264.)

If the dairy and food commissioner of Ohio finds a manufacturer's commodity to be in violation of the statute, he may print, publish, and circulate such information and will not be enjoined. (*Williams v. McNeal*, 7 Sup. Ct., 280.)

The requirements to post a copy of the act in the receiving room of a cheese or butter factory is directory only, and the failure to do so will not exculpate an offender. (*Bainbridge v. State*, 30 Ohio St. Repts., 264.)

An affidavit for selling molasses mixed with glucose is fatally defective if it omit to aver that the article was sold for and to be used as human food. (*Kelley v. State* 1 N. P. Ohio Repts., 238.)

Where, in making vinegar, low wine formed from grain is passed through roasted malt, not in order to add a substantial ingredient, but to give color and aroma, and for which the vinegar would be colorless, such vinegar contains artificial coloring matter contrary to section 2, act of 1888. This act has been held to be constitutional. (*State v. Weller*, 8 Ohio Sup. Ct. Repts., 467.)

The act of a milkman in going his rounds to daily customers constitutes a continuous offer and exposure of his milk for sale, or he is

relieved from liability by the fact that he returns the can from which the impure sample was taken to the person from whom he bought it without having sold thereof, where it does not appear that he intended to have it examined before delivery. (*People v. Koch*, 44 New York, 387.)

The mere coloring of coffee does not make its sale illegal under section 41, public health laws, 1898, nor is the intent in coloring it material, but it is within the prohibition of the act if the coloring conceals damage to the article or makes it appear better than it really is, or of greater value. (*Crossman v. Lurman*, 53 N. Y., 422.)

EXHIBIT NO. 6.

[House Report No. 1426, Fifty-sixth Congress, first session.]

MAY 10, 1900.—Referred to the House Calendar and ordered to be printed.

Mr. BARHAM, from the Committee on Interstate and Foreign Commerce, submitted the following

R E P O R T.

[To accompany H. R. 9677.]

The Committee on Interstate and Foreign Commerce, to whom was referred the bill (H. R. 9677) for preventing the adulteration; misbranding, and imitation of foods, beverages, candies, drugs, and condiments in the District of Columbia and the Territories, and for regulating interstate traffic therein, and for other purposes, having considered the same, submit the following report:

The subject of food and drug adulteration has been under consideration in the United States Congress for more than ten years. At nearly every session since the Fiftieth Congress to the present a bill along the lines indicated in this measure has been favorably reported by the committees of the Senate or House, or by both. In the Fifty-second Congress a somewhat similar bill passed the Senate, practically without opposition, and was reported favorably to the House, but did not reach consideration.

Under the direction of Congress the Department of Agriculture has had exhaustive chemical analyses made of food, drugs, and drinks, to ascertain to what extent adulterations existed, the results of which are reported in the several parts of Bulletin 13 of the Chemical Division of the Department, and under the same authority investigations as to the character and extent of adulteration of food have been carried on in the same Department and reported in Bulletins 25, 32, 40, and 41 of the same division, and in Farmers' Bulletin No. 12, from which extracts are made later on in this report.

These reports establish the fact that the products which enter into consumption for the sustenance of life and the protection of health are adulterated to a greater or less extent, and such adulterations are not confined to any one product or to any one section. The fact is that almost every article of food consumed by man has been the subject

of adulteration at some time or other. Such fact is amply borne out in the chemical analyses reported by the Department.

Since this question was first agitated many State laws have been enacted on the subject. The druggists of the United States have seen the necessity of protecting their trade from ruinous competition, and pharmaceutical laws in nearly all the States and Territories have been passed, and these laws have done much to advance the profession of pharmacy and to protect the dealers and the consumers of such products. Laws protecting the confectioners have been passed in 35 States against the admixture of injurious ingredients in such products. Food laws have been enacted in more than three-fourths of the States and Territories.

It is shown by the various State reports that adulterations are very prevalent. The existence of this great evil, one which affects every individual in the United States and reaches out beyond the confines of our country, can not be denied, because it injuriously affects the markets of our export trade. Every civilized nation in the world has laws regulating the food and drug supply except the United States. We are confronted with this question in shipping our products abroad. It is hardly to be expected that a foreign nation which has regulated its own food supply will submit to improperly branded products coming in from the United States without protest. American food products which have been shipped to foreign countries have found a ready market because of their excellent character and nutritive value and cheapness, but no sooner has one of these products secured a footing than the imitator has followed it up with a substitute which greatly impairs the market. It will therefore be seen that not only the consumers of American products in this country, but the farmer, the manufacturer, the dealer, and our exporters are all directly and individually interested in properly branding our food and drug products.

The longer the present system of allowing such products to be falsely branded and shipped to our foreign neighbors is continued the greater the difficulty will be to establish a foreign trade for them and the harder it will be each year to secure and hold such trade. To illustrate: American butter as one product and American candy as another found ready markets in foreign lands and were followed up almost immediately by adulterated and bogus articles, which depressed the market and restricted the trade. The existence of such a state of affairs serves as an excuse for placing all American food products under a ban and amounts to almost complete prohibition of their sale in foreign markets.

The farmers, bee keepers, fruit growers, and manufacturers of the United States who have taken such a lively interest in the passage of this bill are entitled to the protection that such a law would afford them. They now suffer from the lack of such a law in two ways:

First. Directly by having the prices of their products lowered, often to a ruinous degree, by competition with injurious or fraudulent substitutes which flood the market as pure products.

Second. In an indirect way by limiting and restricting the foreign demand for such products. Foreign nations look with suspicion upon all our food products, because there is no pure-food law in the United States. Under the provisions of this bill the foreign demand will be largely increased, our markets widely extended, and the prices advanced.

This is only one phase of the question. The other reaches every family and every home in the United States. The poor man is the greatest sufferer. He has little or no chance to find out what he is buying. Naturally he desires to use his means to the very best advantage. He wishes to make his dollar go as far as possible, and therefore purchases the cheapest product offered him, not stopping to think, possibly not understanding the fact, that a product can not be sold to the consumer at less than the cost of production, manufacture, or importation.

It has been claimed, and probably with justice, that adulteration is the result of the demand for cheap products; but no man is so ignorant as to desire a cheap product at the expense of his health or his pocket. He may, for example, desire to purchase pepper. He would like to get that pepper as cheaply as possible. He would prefer to pay 5 cents for a package rather than 10 cents. The average consumer has no adequate knowledge of the actual cost of the importation or manufacture of pepper, and therefore is not in a position to discriminate between the two prices, and readily takes the cheaper article, which is composed of from 25 to 75 per cent of adulterants, as shown by chemical analysis in the Department of Agriculture and in various State and Territorial departments having charge of this subject. The man who purchases the cheaper product under these conditions is defrauded of at least 25 per cent of his money.

The United States Government protects its citizens against foreign foes and should protect them against fraud in their food and drug supplies at home.

Of the several State laws it may be said that it has been found practically impossible (and this statement is borne out by nearly every executive officer in charge of the various State bureaus) to properly execute them without the aid of Federal law to control the transportation of adulterated products in unbroken packages from one State to the other and foreign countries. It is evident that the State laws can not be properly enforced without the enactment of a Federal law, because the State law is ineffective beyond its borders. This bill will enable the Federal Government to supplement the State laws with additional safeguards to protect the consumer, the farmer, the dealer, and the manufacturers, and aid them in doing an honest business and punish the men who deliberately and willfully deceives his neighbor or poisons him.

Your committee does not desire to convey the idea that all food adulterations are necessarily injurious to health. Many of them are simply commercial frauds. They affect the pocket rather than the stomach. They deceive and defraud the citizen of his means. They not only commit a fraud upon the man who purchases the goods, but they take an undue advantage of the producer or manufacturer who brands his product properly and compels him to enter into competition with adulterators and to follow their practices or go out of business.

The bill provides:

Section 1. That the Secretary of Agriculture shall organize the Chemical Division of such Department into a bureau of chemistry, which is charged with the inspection of food and drug products and the analysis thereof. The Secretary of Agriculture is to publish the results of examinations and analyses.

The reason for selecting the Department of Agriculture for the

of adulteration at some time or other. Such fact is amply borne out in the chemical analyses reported by the Department.

Since this question was first agitated many State laws have been enacted on the subject. The druggists of the United States have seen the necessity of protecting their trade from ruinous competition, and pharmaceutical laws in nearly all the States and Territories have been passed, and these laws have done much to advance the profession of pharmacy and to protect the dealers and the consumers of such products. Laws protecting the confectioners have been passed in 35 States against the admixture of injurious ingredients in such products. Food laws have been enacted in more than three-fourths of the States and Territories.

It is shown by the various State reports that adulterations are very prevalent. The existence of this great evil, one which affects every individual in the United States and reaches out beyond the confines of our country, can not be denied, because it injuriously affects the markets of our export trade. Every civilized nation in the world has laws regulating the food and drug supply except the United States. We are confronted with this question in shipping our products abroad. It is hardly to be expected that a foreign nation which has regulated its own food supply will submit to improperly branded products coming in from the United States without protest. American food products which have been shipped to foreign countries have found a ready market because of their excellent character and nutritive value and cheapness, but no sooner has one of these products secured a footing than the imitator has followed it up with a substitute which greatly impairs the market. It will therefore be seen that not only the consumers of American products in this country, but the farmer, the manufacturer, the dealer, and our exporters are all directly and individually interested in properly branding our food and drug products.

The longer the present system of allowing such products to be falsely branded and shipped to our foreign neighbors is continued the greater the difficulty will be to establish a foreign trade for them and the harder it will be each year to secure and hold such trade. To illustrate: American butter as one product and American candy as another found ready markets in foreign lands and were followed up almost immediately by adulterated and bogus articles, which depressed the market and restricted the trade. The existence of such a state of affairs serves as an excuse for placing all American food products under a ban and amounts to almost complete prohibition of their sale in foreign markets.

The farmers, bee keepers, fruit growers, and manufacturers of the United States who have taken such a lively interest in the passage of this bill are entitled to the protection that such a law would afford them. They now suffer from the lack of such a law in two ways:

First. Directly by having the prices of their products lowered, often to a ruinous degree, by competition with injurious or fraudulent substitutes which flood the market as pure products.

Second. In an indirect way by limiting and restricting the foreign demand for such products. Foreign nations look with suspicion upon all our food products, because there is no pure-food law in the United States. Under the provisions of this bill the foreign demand will be largely increased, our markets widely extended, and the prices advanced.

This is only one phase of the question. The other reaches every family and every home in the United States. The poor man is the greatest sufferer. He has little or no chance to find out what he is buying. Naturally he desires to use his means to the very best advantage. He wishes to make his dollar go as far as possible, and therefore purchases the cheapest product offered him, not stopping to think, possibly not understanding the fact, that a product can not be sold to the consumer at less than the cost of production, manufacture, or importation.

It has been claimed, and probably with justice, that adulteration is the result of the demand for cheap products; but no man is so ignorant as to desire a cheap product at the expense of his health or his pocket. He may, for example, desire to purchase pepper. He would like to get that pepper as cheaply as possible. He would prefer to pay 5 cents for a package rather than 10 cents. The average consumer has no adequate knowledge of the actual cost of the importation or manufacture of pepper, and therefore is not in a position to discriminate between the two prices, and readily takes the cheaper article, which is composed of from 25 to 75 per cent of adulterants, as shown by chemical analysis in the Department of Agriculture and in various State and Territorial departments having charge of this subject. The man who purchases the cheaper product under these conditions is defrauded of at least 25 per cent of his money.

The United States Government protects its citizens against foreign foes and should protect them against fraud in their food and drug supplies at home.

Of the several State laws it may be said that it has been found practically impossible (and this statement is borne out by nearly every executive officer in charge of the various State bureaus) to properly execute them without the aid of Federal law to control the transportation of adulterated products in unbroken packages from one State to the other and foreign countries. It is evident that the State laws can not be properly enforced without the enactment of a Federal law, because the State law is ineffective beyond its borders. This bill will enable the Federal Government to supplement the State laws with additional safeguards to protect the consumer, the farmer, the dealer, and the manufacturers, and aid them in doing an honest business and punish the men who deliberately and willfully deceives his neighbor or poisons him.

Your committee does not desire to convey the idea that all food adulterations are necessarily injurious to health. Many of them are simply commercial frauds. They affect the pocket rather than the stomach. They deceive and defraud the citizen of his means. They not only commit a fraud upon the man who purchases the goods, but they take an undue advantage of the producer or manufacturer who brands his product properly and compels him to enter into competition with adulterators and to follow their practices or go out of business.

The bill provides:

Section 1. That the Secretary of Agriculture shall organize the Chemical Division of such Department into a bureau of chemistry, which is charged with the inspection of food and drug products and the analysis thereof. The Secretary of Agriculture is to publish the results of examinations and analyses.

The reason for selecting the Department of Agriculture for the

control of this matter is obvious, as it primarily affects the food supply of the country. The Chemical Division of the Department as at present organized has for fifteen years been conducting, under authority of Congress, investigations along these lines, and is fully equipped, both in experienced men and laboratory arrangements, to carry out the work designed in this bill much more economically and thoroughly than any other branch of the Government. This division is in close touch with all of the officials in charge of similar work under State laws, and by collaboration with them and the officials of the agricultural colleges and experiment stations the Secretary of Agriculture will be enabled to execute the law in the most efficient and economical manner. In addition to which the work is practically accomplished without increased cost to the Government. Only a few additional clerks and chemists will be required.

Section 2. By this section the adulteration or misbranding of food and drugs is prohibited, and it is provided that anyone who misbrands or adulterates, or who sells or offers for sale, such goods or drugs is guilty of a misdemeanor punishable by a fine not exceeding \$200 or by imprisonment not exceeding one year. This section is limited to subjects of interstate and foreign commerce.

Section 3 provides that the director of the bureau of chemistry shall make examinations of specimens of foods and drugs offered for sale in original packages in the District of Columbia, or in the Territories, or in any State other than that in which the same shall have been manufactured or produced, or from any foreign country, or intended for shipment to any foreign country; also for the certification of the violation of this act to the proper United States district attorney.

This provision aids the States in carrying out their laws, but in no way trenches upon the reserved rights of the States or infringes upon the police regulations therein.

Section 4 defines the duty of the district attorney in such cases.

In sections 5 and 6 of the bill are found the definitions. These definitions are practically the same as are used in those States which have had for the longest time food and drug laws, such as New York, Massachusetts, and New Jersey, where for many years the State laws have been in force, to the great advantage of the people, and more recently in the States of Ohio, Indiana, Michigan, Minnesota, Kentucky, Wisconsin, Tennessee, California, and Maryland, and therefore tend toward uniformity of definition, both national and international, because they are the same practically which are used in England, Canada, France, and Germany. The executive officers in all the States unite in bearing out the statement that unless there is a Federal law to meet the original-package decision of the Federal courts the State laws can not be successfully executed.

Section 7 authorizes the Secretary of Agriculture to fix standards of foods, through the advice of a board composed of the director of chemistry of the Department of Agriculture, of the chairman of the committee on food standards of the Association of Official Agricultural Chemists (a body composed of the chemists who are appointed in the various States and Territories under the agricultural and experiment-station acts, known as the Morrill-Hatch acts), and five physicians to be selected by the President of the United States—one each from the medical departments of the Army, the Navy, and the Marine-Hospital Service, and two at large—and five other experts to be selected by the Secretary

of Agriculture on account of their attainments in physiological chemistry, hygiene, commerce, and manufacture. This board is required under this section to call in for consultation the duly accredited representatives of the industries for which standards are to be established. Such a board will be nonpartisan and free from any trade alliances or prejudices, and it is believed that the results of their deliberations will be fair, just, and uniform.

It would be difficult for the chemists of the Agricultural Department and for the courts to determine what is an adulteration without some such standard. The standard of drugs is fixed by the National Pharmacopoeia. All this is without additional cost to the Government.

It has been suggested that the power given under this section to the Secretary of Agriculture to fix a standard of food products is too great to be placed in him. Yet, when it is remembered that the power must be placed somewhere, with some department or officer to finally fix the standard, it would seem that the Secretary of Agriculture is a highly eminent and proper official to whom such determination should be intrusted.

Section 8 provides how samples shall be taken and gives ample protection to the seller to enable him to prevent any wrong from being practiced upon him.

Section 9 provides that the vender shall sell to any accredited agent of the Agricultural Department any product that he may have for sale, and for punishment for failure to do so.

Section 10. To prevent any misapprehension of the subject, this section of the bill provides that it shall not be construed to interfere with the police regulations of any State, the District of Columbia, or the Territories.

Section 11 provides for the disposal of confiscated articles under the direction of the courts.

Such is a brief analysis of the bill under consideration. It does not interfere with any legitimate trade or industry, or prohibit the use of any product whatever so long as that product has not been duly adjudged injurious to health by an impartial commission. It simply requires that every product offered for sale, and which is transported from one State into another, shall be branded true to name. It lifts an immense burden from the shoulders of the retailer, who, under existing State laws, is made to bear the burden of the wrongdoing of men outside his State who sell to him. It permits him to secure a certificate of purity from the men from whom he purchases, and this enables the agent of the Government to follow to its fountain head the misbranded product and bring the penalties for violations of the proposed law upon the head of the guilty man and not upon the innocent druggist or the modest corner grocery men.

The report of the Agricultural Department estimates that the amount of fraudulent adulteration reaches 15 per cent, and of injurious adulterations 2 per cent of the product consumed. The latter figures were based on careful estimates prepared by the American Grocer of New York, and the former were based on figures secured by representatives of the Department, who divided the averages received from nearly all the States in half so as not to exaggerate. These figures have been generally accepted by the officials as a basis that could not be impeached. It is estimated that each person in the United States consumes of food, drugs, and liquors an average of

or 'y \$2 per week, and that the population reaches 75,000,000, from which it follows that the consumption reaches \$150,000,000 weekly, \$7,800,000,000 annually, and that on a basis of 15 per cent the fraudulent adulteration reaches \$1,170,000,000 every year, and hurtful and injurious adulterations amount annually to the sum of \$156,000,000—a sum altogether out of proportion to the benefit received even by the perpetrators of the crime, but which through such frauds the honest producer of a pure product, and the honest dealer in handling such products, and the consumer who buys the impure and misbranded product, is compelled to pay or lose, as the case may be, so that the fraudulent vender may enrich himself at their expense, to the discredit of the American goods.

This bill does not in any way interfere with the production or manufacture of anything that is not deleterious to health. It specifically provides that no manufacturer shall be compelled to make his trade formula public. Such publication would jeopardize many honorable and lucrative business interests. It protects the producer and manufacturer against competition with those who improperly brand their products. The object and purpose of this legislation is to secure freedom from fraud and misrepresentation in the commerce of food products. To this end it forbids:

First. Interstate traffic in articles injurious to health.

Second. Improper branding. It in no way interferes with any article that is properly branded. No compound or mixture is legislated against. It provides that all food products shall be properly branded. An imitation, if it is an imitation, shall be branded as such, and a compound, if it is a compound, shall be so branded that any man who goes upon the market to buy shall be protected in his rights in securing the article for which he asks and for which he pays his money. He is secured from the danger of having some bogus or injurious product passed off upon him. He secures the article asked for and not a substitute therefor.

This measure is indorsed by the following great organizations of the country: American Chemical Association, American Medical Society, American Bee Keepers' Association, American Pomological Society, American Pharmaceutical Society, Association of American Colleges and Experiment Stations, Association of Dairy and Food Commissioners, Association of Agricultural Chemists, National Confectioners, National Board of Trade, National Grange, National Alliance and Industrial Union, National Retail Grocers' Association, National Millers' Executive Committee, National Pure Food Association, National Preservers and Syrup Refiners' Association, National Retail Liquor Dealers' Association, Proprietary Association of America, Society of Vital Friends, United States Brewers' Association, Universal Peace Union, Woman's Christian Temperance Union, Wholesale Druggists' Association.

In addition to these, State granges, State alliances, State boards of agriculture, horticultural societies, and local organizations of grocers, pharmacists, scientists, boards of trade, physicians, and chemists are to be found among those who have petitioned for the passage of this bill, and practically the whole press of this country have urged the necessity of thus regulating the health, morals, and business of the country.

In an appendix submitted as a part of this report is given a partial list of articles claimed to be adulterated and adulterants used, and reference is made to certain testimony taken by the Congress of the United States in the oleomargarine cases, in the compound-lard cases, in the various pure-food cases, and to the recent report made by the Committee on Manufactures in the United States Senate.

Your committee respectfully recommend that House bill 9677 do pass with the following amendments:

In line 6, page 1, between the words "and" and "foreign," insert the word "with."

In line 5, page 6, strike out the word "specific" and insert the word "distinctive."

After the word "article," in line 5, page 6, add the following:

Provided, That the term "distinctive name" shall not be construed as applying to any article sold or offered for sale under a name that has come into general use to indicate the class or kind of the article, if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

In line 13, page 6, between the words "branded" and "so," insert "with intent."

In line 18, page 6, strike out the words "contains a" and insert instead thereof the words "consists in;" in the same line and page strike out the word "any" and insert the word "in;" in the same line and page strike out the word "diseased."

In line 23, page 7, strike out the word "this" and insert instead the word "the."

After the word "Columbia," in line 13, page 9, add the following: "to any other State, Territory, or the District of Columbia."

After the word "State," in line 16, page 11, add the following:

Provided further, That nothing in this act shall be construed to interfere with legislation now in force, enacted either by Congress for the District of Columbia or by the Territorial legislatures for the several Territories, regulating commerce in adulterated foods and drugs within the District of Columbia and the several Territories.

It is thought that the second amendment is important and necessary to protect producers and manufacturers in this country in the use of names which have become general to designate some article, where the specific or distinctive name has become generic or in general use. If the producer or manufacturer were denied the use of specific or distinctive names in such cases great injury would necessarily result.

"Sardine" is not the name of a little fish, but the name of a place, so that persons who are engaged in putting up sardines in this country, if prohibited from using the word sardine, a distinctive name, the word could not be put upon the label or brand. So with "champaign," "bordeaux," "cognac," etc. These are names of places and not of wine or brandy, although distinctive, and if the manufacturer be prohibited from their use in branding or labeling, great irreparable injury must of necessity result. Hence the necessity of an amendment so that these names, although distinctive, where they have become generic, or are used to designate a class or kind of article, may still be used, if the name of the place of manufacture be also branded or labelled upon the product.

The following are extracts from Farmers' Bulletin, No. 12, on "Nostums for increasing the yield of butter:"

GILT-EDGE BUTTER COMPOUND.

For several years the farmers of the country have been tempted to invest in various secret nostrums which it was claimed would increase the yield of butter. In the annual report of the Department for 1891 an analysis of a sample of this kind and a description of its effect in increasing the apparent yield of butter was given. The report was as follows:

Mr. H. J. Fish, superintendent of the Producers Dairy Company, 324 B street SW., Washington, D. C., brought to me a sample of the genuine butter together with a sample of artificial butter, prepared by taking equal parts, by weight, of the genuine butter and milk and churning them together with the addition of a small quantity of the substance known as "Gilt-edge butter compound," from the Planet Manufacturing Company of Wichita, Kans. The directions for the use of this compound are to take a pint of fresh unskimmed milk and as much of the compound as you can heap on a silver 10-cent piece and thoroughly mix the compound and the milk together in the churn with as much salt as is necessary to salt 1 pound of butter. Add to this 1 pound of soft butter and churn until the whole mass has come to butter, when you will have 2 pounds of butter and no milk. It is directed that the genuine butter shall not be melted, but made very soft and pliable, so that the churn dasher will easily go through it. The milk should be warmed at the temperature at which it is taken from the cow. The churn should always be scalded or warmed sufficiently to prevent chilling the milk, plenty of salt added, and butter color, if used, for churning. It is particularly enjoined that the butter should not be worked but should be made into rolls and put into jars and set away in a cool place to harden.

The sample of genuine butter which was furnished with the compound was found to contain:

	Per cent.
Water	15.92
Butter fat	80.53
Ash .....	.38
Curd and undetermined	3.17

This represents a fair sample of butter, with the exception that the water and curd are a little higher than the average. In the premium butters obtained at the Chicago dairy show in 1889 the percentage of moisture varied in 10 samples from 8.69 per cent to 11.86 per cent.

The artificial butter prepared from the above by the Producers' Dairy Company was subjected to analysis, and the following numbers were obtained:

	Per cent.
Water	49.55
Butter fat	45.45
Ash	1.34
Curd and undetermined	3.66

It would appear from the above that the artificial butter had been made by churning the pure butter with a very dilute milk.

There was no doubt at all that the gilt-edge butter compound would do what was claimed for it, inasmuch as Mr. Fish had made the butter himself according to the directions.

The compound was also submitted to a practical test in the laboratory of this Department, and it was found that with 1 pound of butter, 1 pint of milk, and 1 gram of the butter compound, 2 pounds of material could easily be made which resembles very closely a first-class article of butter, except that it was considerably softer.

It was at once suspected that the compounds contained some emulsifying substance, either of a mineral nature or some organic ferment. On subjecting the butter compound to analysis it was found to obtain 70.48 per cent of anhydrous sodium sulphate and 29.52 per cent of organic matter. This organic matter responded perfectly to the test for pepsin, and part of it was undoubtedly pepsin; whether a pure pepsin or a crude form was not determined. Having established the fact that this was pepsin, experiments were made with pepsin and other digestive ferments, viz, pancreatin and trypsin. These bodies act as pepsin, and produce an emulsion which enables butter to incorporate an equal weight of milk in its substance without materially altering its appearance. The experiments were also tried with rennet, and it was found to act in the same way; whence it may be concluded that all the digestive ferments, when beaten up with milk and butter in the manner indicated, will produce an emulsion, apparently causing the milk to entirely disappear.

The gilt-edge butter compound is colored pink, with some organic coloring matter in order to obscure its real nature. The anhydrous sodium sulphate seemed to be

added simply as a carrying material, and it is not supposed to produce any active effect in the emulsifying process; in fact, pepsin, pancreatin, trypsin, and rennet used without anhydrous sodium sulphate produce exactly the same emulsifying effect as the gilt-edge butter compound.

By this simple device the unprincipled dealer could easily impose upon his customers, furnishing them with an article of butter containing only half of the portion of that substance without greatly diminishing its price. The keeping properties, of course, of the emulsified butter would not be very great; but for rapid home consumption this would not be noticed.

Black pepsin.—During the year 1892 the Department received many communications relating to the methods of increasing the yield of butter, nearly all of the correspondents speaking of the agent employed as "black pepsin." Evidently the success of those engaged in the "Gilt Edge Butter Compound" business was such as to excite the envy and emulation of other unscrupulous persons. Advertisements appeared in agricultural and other newspapers, and many unwary and uninformed persons became victims of the fraud. The continued success of the fraudulent compound was of such magnitude as to warrant another notice of it in the annual report of the Department for 1892. This report contains the following information:

"In the report for 1891 was published a description of a preparation designed to increase the yield of butter. This preparation was sold at a high price, and had the power of causing the incorporation of the casein, milk sugar, and other constituents of the milk with the butter fat. This was effected by producing a kind of an emulsion by which these bodies were held in suspension. The apparent result of the process was to double the yield of butter. It was pointed out at the time that this substance was pepsin, and that the apparent yield was in reality a delusion, as, of course, there is no method by which the actual contents of butter fat in milk can be increased after the milk leaves the cow.

"During the present year the Department has received numerous inquiries concerning the substance known and sold as 'black pepsin,' which is used for the purpose described above. In reply to these inquiries the information has been of a uniform character, viz: That this substance has essentially the properties ascribed to it, but that its use in all cases must be regarded as a fraud, and hence avoided.

"One sample of the black pepsin above referred to has been examined by the Department and found to consist essentially of a mixture of crude pepsin with sugar. It is hoped that farmers will not be deceived by the claims of persons desiring to sell this compound, inasmuch as butter made in this way will soon spoil, and is practically not butter, but simply an incorporation of butter with about an equal weight of other substances. The sale of such butter is also practically an adulteration of a food product, and should be prohibited by law."

In spite of the warnings given in the above reports of the Department and by the dairy commissions and agricultural experiment stations of many of the States, a brisk and apparently increasing trade has been kept up in these substances, greatly to the detriment of those innocently purchasing the nostrums and to the consumer of the product—a product not butter, but a mixture of butter fat with water, casein, milk, sugar, and other constituents of milk. Such a product soon suffers a separation of its constituents, and is exposed to the decay of its nitrogenous components and a speedy rancidity of its fatty ingredients. The magnitude of these fraudulent practices and the extent to which they have spread throughout the country have been revealed in quite a startling manner by replies to a circular asking for information on this subject sent to boards of health, members of dairy and pharmaceutical associations, and city officers throughout the country. * * *

In regard to the starchy matters which were contained in the samples of black pepsin, they may have been added as a diluent of the annatto or as a drying material in the manufacture of the pepsin or rennet employed in the preparation of these bodies.

Annotto was the coloring matter found in each case, except that of the pink powder mentioned. The coloring matter of the annotto is readily soluble in ether, leaving a dirty brownish residue. The soluble ash was in each case composed of sodium chloride, with the exception of the case of the nitrate of potash and sodium sulphate mentioned. There was also a little sodium sulphate present in most cases, and in one instance a considerable quantity of sulphate of magnesia. It is probable that these may have been accidental impurities of the common salt employed.

The property of coagulating milk was chosen as the most definite means of detecting the presence of rennet or pepsin, or other organic ferment of the digestive series in the several preparations examined. Inasmuch as sodium chloride and other organic salts have also the power of coagulating milk, comparative experiments were necessary to exclude this possible source of error. In the case of sodium chloride

relatively large quantities of the salt and a considerable amount of time are necessary to produce coagulation in any degree that at all resembles that produced by an organic ferment. In the execution of the experiment 5 grams of the sample were placed in a small beaker and rubbed to a homogenesus paste with 5 c. c. of water. After allowing some time for the complete solution of the pepsin, 50 c. c. of milk, previously warmed to 40° C., were stirred in and the beaker placed in a water bath of which the thermometer registered 40° C., a little above blood heat. After five or ten minutes the milk was thoroughly coagulated in each case of the black pepsin compound, showing the presence of a small amount of pepsin or rennet. Milk, in comparative experiments with 4 grams of sodium chloride, remained unchanged after four hours at the same temperature.

It is curious to observe that there are two distinct types of the black pepsin found, as indicated by the above analyses. Serial Nos. 11255, 11257, 11259, 11280, 11284, and 11289 evidently all belong to the same general type, as their composition is as nearly the same as could be expected, owing to the difficulty of effecting a complete mixture of the material employed. On the other hand, serial Nos. 11258 and 11287 represent a different type, containing about 20 per cent more of organic matter than the type first mentioned. In fact, it seems to make but little difference about the type of the material employed, inasmuch as any of these preparations containing a small amount of rennet or pepsin can be used for making the imitation butter desired. Evidently, however, two distinct firms are engaged in the manufacture of the material.

The actual value of a box of the so-called black pepsin is only a few cents, and therefore the enormous profits which are made in its manufacture and sale at \$2.50 a box can be well imagined.

It is not believed that any further exposition of this barefaced fraud is necessary. We have made an attempt to obtain samples of all the various compounds which are sold for producing the effects described. There are many of them, however, which we were not able to get. Farmers can rest assured that any substance which is presented to them for the purpose of increasing the yield of butter above that of the normal belongs to some such class of fraud as has been exposed in this bulletin.

The proper way for increasing the yield of butter is to secure a breed of cows giving a milk with a high content of butter fat, giving the animals proper nourishment, and keeping them in a clean and healthy condition. The proper treatment of a herd of cows, together with neatness in the dairy, not only will give an increased yield of butter, but will also enable the producer of it to get an increased price.

The best method of making a good and sweet butter in large quantity is careful selection of cows and careful feeding and care in the dairy. The proper attention to neatness and the sterilization of the vessels used about the dairy will secure the growth of a ferment which properly ripens the cream and excludes other ferments which produce all kinds of injurious changes in the milk. All vessels used in the dairy should be subjected every day for some time to the temperature of boiling water, to abeolutely exclude all putrescent bodies and fermentative processes from the dairy save those which are necessary to the normal ripening of the cream. The farmer who attends to these details will have no occasion to invest his money in fraudulent nostrums for increasing the product of his dairy and the magnitude of his profits.

The dairy industry of the United States is already one of great importance in agriculture, and is rapidly increasing in magnitude. In the agricultural experiment stations of the several States investigations are in progress relating to the influence of the breeds of cows on milk and butter production. These studies extend also to the cost and effect of different feeding stuffs in their relations to the yield of milk and the percentage of butter fat therein. The advantages of deep and shallow setting of milk, the influence of temperature on the percentage of cream obtained, the profit of using the centrifugal separators, and the use of the by-products of skimmed milk and milk sugar are all in process of investigation for the benefit and information of dairy farmers. In some States dairy schools have been established where students are taught the science and art of dairy farming. Even if in former times there may have been some apology for the use of nostrums and humbug in milk and butter production, the advancement of knowledge on these subjects will no longer excuse it.

APPENDIX.

Reference is made to the following reports made by the Department of Agriculture, departments of State control of food and drugs, and pharmaceutical associations of the United States; also to numerous reports heretofore made to the Senate and

House of Representatives upon the subject of adulterated food and drug products. The references are as follows:

First. Bulletin 13, Chemical Division, Department of Agriculture.

Second. Bulletins 25, 32, 41, 42, and Farmers' Bulletin, No. 12, Chemical Division, Department of Agriculture.

Third. Reports of State health officers and of food and dairy commissioners of the States and Territories where food laws exist.

Fourth. Reports of the various pharmaceutical associations, annually during the last ten years.

Fifth. Report of the investigation in the oleomargarine case.

Sixth. Report of the Committee on Agriculture on the lard investigation in the Fiftieth and Fifty-first Congresses.

Seventh. Report of Hon. James Laird, of Nebraska, from the Committee on Agriculture, on the pure food and drug bill introduced by William H. F. Lee, of Virginia.

Eighth. Report of the Fifty-second Congress on the pure food bill known as the Paddock bill, which passed the Senate, and the bill indorsed by Mr. Allen, of Michigan.

Ninth. Report of the Committee on Agriculture on the Brosius bill in the Fifty-third Congress.

Tenth. Report presented by the Senate Committee on Agriculture and Forestry on the Faulkner bill in the Fifty-fifth Congress.

Eleventh. The very exhaustive report made by Senator Mason from the Committee on Manufactures to the present Congress.

The above documents would comprise a library in themselves, and cover nearly every phase of the question of food and drug adulterations. The fact that the bill has been recommended either by the Senate or House of Representatives regularly since the Fiftieth Congress, and that the measure has not only been recommended in the House by the Committee on Interstate and Foreign Commerce, which has charge of the bill and makes this report, but that practically the same bill has been recommended by the Senate Committee on Manufactures, and is now being considered by the Committee on Agriculture and Forestry of that body (which at the last session reported it favorably), shows that the demand for the measure is great and that the necessity for the legislation is apparent.

Adulterated articles and their adulterants.

Name.	Deleterious.	Commercial frauds.
Arrowroot.....	.....	Other starches which do not have some hygiene effect.
Alcoholic liquors.....	Fusel oil, tannin, logwood.....	Water, coloring matter, burnt sugar.
Brandy.....	Essential oils.....	Water, burnt sugar.
Bread.....	Alum, sulphurite of copper, ammonia.	Flour other than wheat, potatoes, and inferior flour.
Butter.....	Copper.....	Water, other fats, excess of salts, starch, oleomargarine, cotton oil, olive oil, peanut oil, beef suet. The proper proportion of water should be 5 to 10 per cent.
Baking powders.....	No standard.....	Starch and flour in excessive quantities.
Black pepper.....	Sand, red clay.....	Buckwheat flour and hulls, P. D., cracker crumbs, Indian meal, wheat flour, charcoal, bran, linseed meal, cocoanut shells, mustard husks, sawdust, olive seeds, cayenne, and ship bread.
Beer.....	Salicylic acid, tobacco, seed of <i>cocculus indicus</i> .	Burnt sugar, licorice, treacle, glucose, quassia, coriander, caraway seed, cayenne pepper, soda, salt (to increase thirst), artificial carbonic acid, gas, grains other than barley. As there is no standard it is doubtful whether the last is an adulterant, many preferring rice to malt beer. Beer is often not properly aged, artificial clarifying.
Cheese.....	Salts of mercury in rind.....	Skim milk (for whole cream), oleomargarine, cotton oil, etc., false coloring, and lard.
Cotton-seed oil.....	.....	Used extensively for oleo, lard, butter, olive oil, etc.
Candy.....	Poisonous colors and flavors, terra alba, talc, barytes, chrome yellow, arsenic, sulphate of copper, prussic acid, tartaric acid, fusel oil, analyne dyes.	Glucose (this article is now generally used and when properly made is not injurious), starch, flour, grape sugar.
Canned goods.....	Salts of copper, acids, lead, decayed.	Excess of water, inferior goods, damaged goods.
Coffee.....	Green coloring matter, other analyne colors.	Imitation beans (both green and roasted), peas, beans, chicory, rye, chefus, almond shells treated with molasses and roasted, polishing, burnishing, weighting with water acorns, burnt sugar, pea hulls.

Adulterated articles and their adulterants—Continued.

Name.	Deleterious.	Commercial frauds.
Chrome yellow....	Used by confectioners and bakers to give yellow color. <i>Very dangerous.</i>	
Cider	Salicylic acid, dried apples added to chemical mixtures.	
Cocoa and chocolate.	Oxide of iron and other coloring.	Animal fats, starch, flour, sugar, and caramel.
Cream of tartar....	Sulphate of lime, alum, terra alba, plaster, tartaric acid.	Cornstarch, flour.
Cloves.....		Arrowroot, B. D., etc.
Cayenne pepper....	Red lead, chromate of lead	Flour, salt, ship bread, Indian meal, ground beans and pease, flour, and turmeric. (These adulterations will apply to all adulterations of spices with slight variations.) Many spices are simply of the above ingredients with a very small portion of the real product and a good deal flavoring extracts.
Flour.....	Alum (sometimes to give whiteness) barytes (claimed).	Peas, ground rice, corn meal, flourine, and product of glycerine.
Ginger.....		Turmeric, cayenne pepper, mustard, inferior and refused ginger.
Gin.....	Alum salts, spirits of turpentine, artificial essence.	Water, sugar.
Glucose.....	Excess of oil of vitriol and lime ..	This article is probably one of the most extensively used adulterants in the country. When pure I do not believe it to be injurious to health. It is used to adulterate the following: Sugar, cane, and maple sirups, molasses, jellies, jams, confectionery, vinegar, liquor, wines, honey, beer. It is used for cakes, sauces, and tobacco.
Honey.....		Glucose, sugar, sirups, molasses, and raw sugar.
Horse Radish.....		Turnips.
Isinglass.....		Gelatin.
Jams and jellies....	Artificial essence and dyes, preservatives.	Glucose, gelatin, jelly made from refuse fruit, cores, and parings.
Ice cream	Aniline and other coloring matter, essence of bitter almond.	Buttermilk, skim milk, cornstarch.
Lard.....	Caustic lime, alum	Starch, stearin, salt, cotton-seed oil, and water.
Mustard	Chromate of lead, sulphate of lime, Martin's yellow, gypsum, turmeric, weighted with terra alba.	Yellow lakes, flour, cayenne, mustard colored with turmeric, diluted with starch, wheat and rice flour.
Milk.....	Water (because it reduces the nourishing qualities of the article), preservatives, from diseased and filthy cattle, boracic acid, borax, salicylic acid.	Burnt sugar, annatto, calf's brains.
Macaroni.....	Turmeric and Martin's yellow, saffron.	
Molasses.....	Salts of tin	Glucose, sirups.
Meat	Infested with parasites, diseased.	Bone fats, candle grease soap, grease, horse fat.
Oleomargarine	Refuse pork (liable to produce trichinæ).	Poor vinegar, poor spices.
Pickles	Salts of copper and alum.....	Apples, pumpkins, molasses, glucose.
Peas.....	Salts of copper	
Preserves.....	Aniline colors, gelatin, preservatives.	
Pepper, described above.		
Plimento.....		Ship bread.
Sago.....		Potato starch.
Rum	Cayenne pepper, artificial essence	
Spices, described above.		
Sugars.....	Salts of tin, and salts of lead, terra alba, glue, sand, gypsum. (Putrid blood is often used to purify it.)	Grape sugar, flour, starch, rice flour, bean dust.
Sirups	Salts of tin	Glucose, dextrin.
Tea.....	Prussian blue, plumbago gum; weighting—nitric acid, sand, soapstone, china clay, gypsum.	Foreign leaves, spent tea, leaves dried over, inferior qualities.
Vinegar	Sulphuric, hydrochloric pyrolytic acids.	Burnt sugar, water, wine, and meal vinegars colored and sold in imitation of cider vinegar.
Wines	Aniline colors, crude brandy, artificial essences, and coloring matter.	
White pepper.....		Starch, flour.

EXHIBIT 7.

THE ADULTERATION OF FOOD.*

[By H. W. Wiley, chemist of the United States Department of Agriculture.]

Barnum made a colossal fortune by acting on the principle that Americans liked to be humbugged. There is something soothingly seductive in being led to the circus by lurid posters showing unattainable attitudes of impossible monsters. This attractiveness is increased by the knowledge that, like the limited express, it implies an extra charge. The public would rise with unanimous execration were it to attend a circus where side shows were not known and the post ludum concerts were free. Were the feats of legerdemain of the mystic Hermann actual performances of supernatural power they would lose for us half their charm. To be cheated, fooled, bamboozled, cajoled, deceived, pettifogged, demagogued, hypnotized, manicured, and chiropodized are privileges dear to us all. Woe be to that paternalism in government which shall attempt to deprive us of these inalienable rights. There is no point on which the average American is more sensitive in respect of legal restriction than in those instances in which the law interposes to prevent him from making a fool of himself. Only after a long struggle has a distinguished citizen of your city, now in public life, been able to prevent the mails from paying the expenses of the delta of the Mississippi. Only the other day, in New Orleans, I read in the lottery advertisement, that the ticket drawing the last capital prize of \$75,000 had been sold in Washington, Philadelphia, and Kalamazoo. This all doubtless comes from the fact that in this country each one of us is just as good as the next, a condition of affairs which, in true Gilbertian humor, has been touched off in the distich—

When everybody's somebody,
Nobody's anybody;

therefore we should not be surprised at the pertinent inquiry of why A, being no better than B, should interfere with B when B wants to get drunk or buy a lottery ticket.

In regard to the character of what we eat and drink, we find the same unwillingness to be watched over and protected.

A few days ago in Chicago I went out to the Union Stock Yards to look at the process of meat inspection. From each carcass of pork intended for exportation is taken a sample of the flesh, and this is carefully examined for trichinæ. "Do you often find diseased

* A lecture delivered before the Franklin Institute.

samples?" I asked. "Yes," said the attendant, "from 1 to 2 per cent of all the samples examined is found infected." "Could I see a sample of that kind?" "Certainly. Has anyone a trichinosed sample in the microscope?" A pretty girl microscopist held up her hand. I looked and saw for myself the curled and coiled serpent ready for a strike. How I congratulated that lucky sarcophagous Teuton who had been saved from a horrid death by the fairy fingers and sure blue eyes of the trichinæ girl. "What do they do with these infected carcasses?" A shrug of the shoulders led me to believe that they were sent to soap factories as they doubtless are, and this was followed by the expression, "But Americans don't eat raw pork," and I am led to suppose from this that trichinæ are really very good and nice when well broiled. Next morning, when I ordered ham for breakfast, I asked the waiter to have it cut thin and broiled crisp. Even then, when it was brought in, I could not help thinking that it looked like a bretzel.

That distinguished jurisconsult and patriot, Senator Paddock, of Nebraska, during the first session of the present Congress, after years of futile struggle, succeeded in having the Senate pass what is known as the pure-food bill, but it seems from the provisions of this bill that the Congress of the United States has only power to protect the foreigner, the disfranchised, and the Indian not taxed. The provisions of the bill are confined to the Territories and the District of Columbia, and to interstate commerce. Mild as are the penalties of the bill, allowing the citizens of any State to make a dessert and call it peas if they like, yet it has been left unpassed in the House of Representatives.

The Paddock pure-food bill, to summarize it briefly, has for its purpose the protection of commerce in food products and drugs between the several States, the District of Columbia, the Territories of the United States, and foreign countries, and the Secretary of Agriculture is authorized to make the necessary rules for carrying out the objects of the bill. He is authorized to cause to be punished, through the proper courts, any one introducing, in any State or Territory or the District of Columbia, or from any foreign country, any article of food or drugs which is adulterated or misbranded. The act says that the term "food" shall include all articles used for food or drink by man, whether simple, mixed, or compound. In the case of food or drink, an article shall be deemed to be adulterated if any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product when offered for sale shall be calculated to deceive the purchaser; further, if it contain any inferior substance or substances substituted wholly or in part for the article, or if any valuable constituent of the article has been wholly or in part abstracted, or, if it be an imitation of, and sold under the specific name of, another article, or if it be mixed, colored, powdered, or stained in a manner whereby any imperfection therein shall be concealed, or if it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it. Further, the food is declared to be adulterated if it consist of the whole or any part of a diseased, filthy, decomposed, or putrid animal or vegetable substance or any portion of an animal unfit for food, provided that an article of food shall not be considered adulterated if it be a mixture or compound sold under its own distinctive name, or an article labeled, branded, or tagged, so as to plainly indicate that it is a mixture, compound, combination, or blend.

It will be seen by the above provisions that the bill is very far-reaching in its character, and it contains also the proper penalty for enforcing its operation. This bill passed the United States Senate on March 9, 1892. Mr. Paddock, in concluding his speech in advocacy of the bill, used the following words:

In the name and in the interest of public morality, I appeal to you to set legislative bounds, beyond which the wicked may not go with impunity in this corrupt and corrupting work. Let us at least attempt to perform our part in the general effort to elevate the standard of commercial honesty which has been so disgracefully lowered by these deceptions, frauds, and robberies, the malign influence of which is everywhere present, everywhere felt.

Let us help by our action here to protect and sustain in his honorable vocation the honest producer, manufacturer, merchant, and trader, whose business is constantly menaced and often ruined by these unscrupulous competitors, who by their vile and dishonest arts, manipulations, and misbrandings are able to make the bad and impure appear to be the pure and the genuine; thus, by a double deception, both as to quality and price, making the worse appear the better choice to the unintelligent mass of purchasers.

In the interest of the great consuming public, particularly the poor, I beg of you to make an honest, earnest effort to enact this law. At best, a great multitude of our people are oppressed by a fear, a never-absent apprehension, which they carry to their work by day, and to their beds by night, that perhaps at the end of the following day, or week, or month, their ends may fail to meet. Under the strain of this grim menace life itself becomes a burden almost too grievous to be borne. But the thought of helpless wife and children, whose sole dependence he is, renews the courage of the wage-worker from day to day, and so he struggles on, praying and hoping to the end.

These, Mr. President, are the men, and these the women and children, for whom, before all others, I make this appeal. If you could save to these the possible one-third of the nutritious element of their food supplies which is extracted to be replaced by that which is only bulk, only the form and semblance of that of which they are robbed by the dishonest manipulator and trader, you would go a long way toward solving the great problem of the laboring masses—whether for them it is “better to live or not to live,” whether it is better to bear the ills they have, rather than fly to others that they know not of, that lie beyond in the realm of governmental and social upheaval and chaos.

There is a good deal in the way of comic “asides” as the momentous social drama which holds the boards at this time, and whose *dramatis personæ* are the so-called common people, rapidly advances to the epilogue. Be not deceived! The storm doth not abate. It is ever rising. Its violence is ever increasing. Take heed when the people demand bread that you continue not to give them a stone, lest the angry waves of popular discontent may some time, perhaps in the near future, rise so high as to overwhelm and engulf forever all that we most greatly value—our free institutions and all the glories and hopes of our great Republic—which are not ours alone, but which belong—and if they are preserved and shall permanently endure will be an ever-continuing blessing—to all mankind.

This pure-food bill has received the unanimous support of nearly every agricultural organization in the United States. It has been opposed by a number of manufacturing establishments interested in the production of drugs and mixed foods, and also by those largely interested in the manufacture of substitutes for lard. If adopted it can at once be seen that it would do away with the necessity of the oleomargarine law, which is a special form of legislation, and, like all special legislation, must be open to many objections.

As before stated, the national law, as indicated above, does not protect the citizen of any State against an adulterated food which is manufactured and sold within the State. Such police power must be left wholly to the several States. Many of the States already have laws on their statute books dealing with the subject of food adulteration. These laws, however, are for the most part inoperative, and not being based on a common plan would naturally not secure, even when fully enforced, the same degree of protection in all States. What

is needed for a complete legal protection of the people against adulterated foods is not only the enactment of the Paddock pure-food bill, but a similar enactment of similar scope and aim for each of the several States.

Among the various States which have laws on the subject may be mentioned Illinois, which has an act to prevent and punish the adulteration of articles of food, drink, and medicine, and the sale thereof when adulterated. There is also a special law preventing the adulteration of butter and cheese.

Iowa has a statute entitled "An act to prevent deception in the manufacture and sale of imitation butter and cheese." One of the provisions of this law is that no keeper of a hotel, boarding house, restaurant, or other public place of entertainment shall knowingly place before any patron, for use as food, any imitation butter or imitation cheese unless the same be accompanied by a placard containing the name in English of such article printed in plain roman type. Iowa also has a special law in regard to the adulteration of milk.

Maine has a food law to prevent the manufacture and sale of adulterated lard. Maine also has a general law on the adulteration of food and drinks.

Maryland has a statute to provide for the prevention of the adulteration of articles of food and drink and the sale thereof when adulterated or unwholesome. The enforcement of this law is placed largely in the hands of the State board of health.

Perhaps the best of the State laws concerning adulteration are those of Massachusetts, the statutes of which provide "that no person shall, within this Commonwealth, manufacture for sale, offer for sale, or sell any drug or article of food which is adulterated within the meaning of this law." The law of Massachusetts is, in all essential particulars, that of the Paddock pure-food bill, of course with such variations as are necessary in the enactment of a State law as compared with a Federal law. The law of Massachusetts is especially effective as regards the sale of adulterated milk and other adulterated food and has a system of State inspection which has already reduced the percentage of adulteration of such articles to a very low figure. Monthly returns are made by the inspectors and analysts of foods and drugs. The report for the month of October, which is the latest one, contains the results of the inspection of milk, butter, cheese, olive oil, vinegar, spices, cream of tartar, molasses, maple sugar, maple syrup, honey, tea, coffee, confectionery, and miscellaneous articles and drugs. The total number of samples examined was 610, the number found to conform to the legal standard was 428, and the number of samples varying from the legal standard, that is, adulterated within the meaning of the act, 182. The percentage of the adulteration was 29.8. The actual percentage of adulteration is very much less than this, for it is only suspicious articles of food to which the attention of the board is directed. Certain staple products, such as sugar, flour, and the various cereal products, are very rarely adulterated and receive but little inspection. The work of the board is, therefore, mainly devoted to the inspection of such articles as have been found, by several years of experience, to be especially liable to adulteration. Eleven actions were brought in the courts during the month for violation of the food and drugs act. Five were for the violation of the statute relating to the sale of milk; two of coffee; one each of honey, cream of tartar, cloves, and pepper. In

all of the eleven cases conviction followed and fines of \$247 in all were imposed. The cities and towns from which samples of food were collected during the month were Boston, Worcester, Lowell, Cambridge, Springfield, Lawrence, Somerville, Salem, Chelsea, Malden, Newton, Taunton, Waltham, Pittsfield, Brookline, Charlton, Greenfield, Hyde Park, Lee, Marblehead, Milton, Natick, North Adams, Orange, Stoneham, Stoughton, and Ware.

The case of Massachusetts is given somewhat at length on account of the excellence of the system of inspection. It shows what a State law can accomplish when wisely made and honestly enforced. In the one item of milk alone it would be difficult to estimate the amount which has been saved to consumers by the strict enforcement of the law which requires the milk sold to contain a certain amount of total solids and fat.

Time remains only to mention the other States which have laws of some kind on the subject of adulteration. These States are Michigan, Minnesota (which has a series of good laws, both special and general), New Hampshire, New Jersey (which also has a good system of laws), New York, Ohio (also with a fairly good system), and Pennsylvania, which divides its law into three sections; the first relating to liquors, I suppose because this is the most important of the foods of this State; the second to food adulteration in general, and the third especially to dairy products. The weakness of the Pennsylvania law is not so much in the character of the provisions relating to the sale of foods as in the method of securing their enforcement. It does not provide for any system of inspection as does the law of Massachusetts; and no law relating to the adulteration of food is of any value whatever as a protection to the community unless a rigid system of constant inspection is provided for. The Pennsylvania law declares that the addition of water or of ice to milk is an adulteration, and any milk obtained from animals fed on distillery waste is declared to be impure and unwholesome. The removal of the cream is also declared an adulteration. The law prevents the manufacture of any substance provided to take the place of pure butter fat. This is not a restriction on the sale of an adulterated butter, but is a total prohibition of the manufacture and sale of any substitute for butter, even if it be sold under its own proper name.

Continuing the list of States with laws against the adulteration of food, we have next Virginia and Wisconsin. The latter State has a very good law, which not only has a general provision, but also enters into detail, especially in regard to dairy products, describing what shall be considered pure milk, or establishing a standard thereof, and stating how an adulteration of milk shall be proved, and how adulterated honey shall be marked. It contains penalties for the sale of unwholesome provisions and items in regard to the adulteration of foods and drugs, fraud in dairy manufactories, the form of label to be placed on dairy products, the strength of vinegar, etc.

It is hardly patent to this lecture to refer to foreign countries, but it may be said that in general the best laws in this country, national and Federal, are based on the English food and drug act, which is entitled "An act to make better provision for the sale of food and drugs in a pure state." This became a law on the 11th of August, 1875.

The laws of the continental countries of Europe are also in the main

effective, but contain such a multitude of minutiae as would render them very burdensome if enacted in this country. The English law has been in operation long enough to prove its efficiency, and under it hundreds of convictions for the sale of impure foods and drugs have been secured.

The Canadian law is essentially the same as that of England, although not so comprehensive.

The States not mentioned in the above list have, so far as could be ascertained, no laws relating to the adulteration of foods. At least they were not reported, although inquiries were sent to the secretary of state of each State in the Union for information in regard to this matter.

Many municipalities also have local laws applying to the sale of adulterated foods. These laws are mostly of a specific nature and apply chiefly to dairy products. There would be no time here to even mention the cities having local laws on this subject, but there are now very few large cities in the country which do not at least have some kind of milk inspection.

Lying at the root of the question of food adulteration is the inquiry, what is meant by pure food? In the laws which have been enumerated attempts have been made to legally decide what pure food is. Divested of all legal technicality, pure food is a wholesome article of food or drink which is sold and consumed under its proper name. With each particular article there must be established a separate standard which a consensus of experience with a great number of known pure substances in that list shows to be required. For instance, take the case of milk, which is one of the most common articles of food and perhaps has been more generally adulterated than any other one. Analyses made all over the world on hundreds of thousands of samples of healthy cow's milk have shown that the average content of solids therein is practically nearly 13 per cent. A normal milk which falls below this standard shows some peculiarity in the animal giving it, either an incipient disease, deficient nutrition, or some idiosyncrasy. The mixed milk of a herd of healthy animals will rarely fall below this standard. For this reason the standard of 12½ per cent of total solids in milk has been adopted in most countries having laws on the subject. In some cases the benefit of the doubt is given to the vendor, and a standard is fixed at 12 per cent. Now, of these total solids a certain quantity in normal milk must be butter fat. It is not often that the butter fat of a perfectly healthy cow's milk falls below 3 per cent of the total weight of the milk. It is much more apt to be 3½ per cent. Hence, in fixing a standard of pure milk not only must the percentage of solids be given, namely, 12 or 12½ per cent, as the case may be, but also the quantity of fat contained therein. This percentage varies in different laws from 2½ to 3½ per cent.

In a similar method the standard of purity of any other article of food must be determined by a careful examination of pure samples from all quarters and by them fixing a standard below which an article must be regarded as suspicious or adulterated.

As a distinction between a pure and an adulterated article, take the cases of butter and oleomargarine. Pure butter, for instance, must be clean, sweet, wholesome, and made of the fat of cow's milk, and must contain only a certain proportion of water, curd, and salt. Oleomargarine may be as sweet, clean, and wholesome as the butter men-

tioned above, yet when sold as butter it is clearly not pure food, but a spurious article.

Again, when the housewife buys lard it is supposed that the article she obtains has been made from the fat of healthy, freshly slaughtered hogs, carefully selected and cleaned and rendered in clean kettles or tanks. Cotton-seed oil and beef tallow, in respect of cleanliness, nutritive properties, and wholesomeness may equal and even excel pure lard, but the admixture of these articles with hog's lard, or their sale as such without the knowledge of consumers, is clearly a fraud and an adulteration.

From a practical point of view, food adulteration may be considered under two general aspects, namely:

(1) Adulteration harmless to health and practiced merely for cheapening the article or making it more attractive to the sight or taste.

(2) The addition to a food or drink of substances positively injurious to health.

Such substances are added chiefly as preservatives or for the purpose of coloring or decolorizing, or for the purpose of giving a particular flavor or taste. As a rule, they are added in minute quantities. In fact, the proportion of such substances is usually so small that a moderate or intermittent use of food so treated may not produce any great injury to the system. The continued use of such articles, however, must end in the impairment of the general health and sometimes in permanent injury.

In the latter class of adulterations must also be included those injurious substances naturally arising from the decay of wholesome foods, or from the development of noxious substances in canned foods, or from the formation of poisonous salts by the action of the canned foods on the solder and tin of cans. Such materials, while not intentionally added, are, nevertheless, adulterations within the true scope and meaning of the term as applied to foods. In other words, it is not necessary to prove intent in order to establish the fact of adulteration. Any food which is not what it purports to be, which contains any unwholesome or poisonous ingredient, or which has any artificial coloring or facing material, is, to all intents and purposes, adulterated.

There is one legal exception to the above classification, namely, the use of annatto in coloring butter. The national oleomargarine law, applied to the Territories, the District of Columbia, and to interstate commerce, permits an artificially colored butter to be passed as genuine, and I believe most State laws referring to this subject contain the same provision. Indeed, in some States oleomargarine exposed for sale is required by law to be stained pink or some other color distinctive from yellow, and such a stain, while an actual adulteration, could not be classed as illegal.

There is still another form of fraud in food which may be defined as a negative adulteration. It consists in extracting from a food part of some valuable ingredient, and selling the residue as the genuine article. The sale of skimmed milk for whole milk and of spent tea leaves for genuine leaves are illustrations of this kind of fraud. Perhaps the best method of illustrating these various kinds of fraud and adulteration will be to call attention to some of the articles sophisticated in the ways described. No attempt, however, will be made to give a complete list of adulterated articles, for such a list would fill a volume. Attention, therefore, will be called only to the more important articles of food,

and to those which are most commonly adulterated. In addition to this, examples will be given of some peculiar forms of adulteration which are little known to the public.

Milk.—Normal cow's milk should contain about 3½ per cent of butter fat, and should yield, on standing in a cool place for twenty-four hours, from 10 to 20 per cent by volume of cream. Until the establishment of milk inspection in cities, whole milk was something of a rarity. With careful inspection, such as obtains in Boston, the percentage of adulteration has been largely reduced.

An ingenious method of milk adulteration is sometimes practiced by the shrewd husbandman in such a way as to preserve his tender conscience from being seared. The cream in the cow's udder is naturally separated in part from the milk, unless the cow, just previous to milking, be subjected to violent exercise. The first milking, therefore, is less rich in butter fat, and it can be sent directly to the consumer. The last of the milking, called stripplings, on the other hand, is nearly pure cream, and can be preserved for butter making. Butter fat, being lighter than whole milk, can not be removed without increasing the density of the remainder above the normal. This density, however, can be reduced to the proper limit by the judicious addition of water. The testing of milk by the lactometer alone is therefore not a certain method of discriminating between a pure and an adulterated article.

Condensed milk is made by evaporating whole milk at a low temperature and in a high vacuum, in copper vessels, yet even at this low temperature some of the distinctive aroma of the milk is carried off by the escaping vapors. It therefore happens that even when evaporated milk is diluted to its original volume with water, it is never exactly itself again. Yet a pure condensed milk is not an adulterated article, for it is sold as condensed milk and hence no fraud is practiced. When, on the contrary, as is often the case, sugar or salicylic acid is added in order more securely to preserve the condensed product, then a perfect case of adulteration is established. The manufacturer, however, may relieve himself of all responsibility, in so far as the addition of sugar is concerned, by stating on the label the amount added. In cases of deleterious preservatives, however, there would be no excuse. Their use in all cases should be prohibited.

Butter.—In regard to butter, the character of adulteration is well known. The use of oleomargarine as a butter substitute has been practiced for many years. The oleomargarine law, which imposes a tax of 2 cents a pound on the manufactured product, has not helped to restrict its use but has rather increased it by giving to the consumer a guarantee of purity. The amount of tax collected on manufactured oleomargarine for the fiscal year ending June 30, 1892, was \$945,675, which shows that there were 47,283,750 pounds of oleomargarine manufactured in the United States in twelve months.

The number of retail dealers in oleomargarine increased during the year more than 25 per cent over the preceding year. The amount of tax paid by retail dealers for the fiscal year ending June 30, 1891, was \$146,293.70, and for the fiscal year ending June 30, 1892, \$204,215.

The increase in the number of wholesale dealers was nearly 100 per cent. The amount of tax paid by wholesale dealers for the fiscal year ending June 30, 1891, was \$53,191, and for the fiscal year ending June 30, 1892, \$106,036.

There can be no reasonable objection to the use of oleomargarine; it is clean, wholesome, and digestible. When it is to be kept for a long time before use, as on shipboard or in distant mining camps, it is preferable to butter, because it has but little tendency to become rancid.

Lard.—For similar reasons there can be no possible objection to the use of cotton-seed oil as a substitute for lard, or when mixed with lard, provided it is to be sold for what it is. Most of you are familiar with the great fight which was made against the use of the term "pure refined lard," which was the trade name of a mixture of lard stearine with cotton-seed oil. "Pure refined lard," it was claimed, was a term which had been used so long to designate the mixed product that it had become in reality a trade-mark, and was therefore entitled to respect and protection. In the investigation which was held before the Congressional committees, it appeared that as to the trade the contention was quite justifiable. Goods sold under that name were understood to be mixed. When, however, the mixed product was offered to the consumer, it was purchased with the idea which the name naturally implied, that an extra fine quality of hog's lard was secured.

All attempts to pass a pure-lard bill, modeled on the oleomargarine act, have heretofore failed in Congress, but several of the States have prohibited the sale of mixed lard, except when offered under the proper name. Manufacturers have, therefore, been gradually forced to abandon the term "refined lard" when applied to this commodity.

I am of the opinion that many persons would prefer a cooking fat largely of vegetable origin to a pure animal product. To me it seems that some State legislatures have taken a reprehensible course in prohibiting the sale of vegetable oils as a substitute for lard for cooking. The grower of hogs undoubtedly has a right to contend against the sale of vegetable oils as hog fat, but when he pushes his claim still further and demands that the markets be closed to products as pure and nutritious as his own, he passes beyond the bounds of public support. Every person in the United States who prefers cotton oil to lard should be allowed to purchase his supplies without let or hindrance. Every grower and maker of pure lard has the right to an equally open market from which every adulterated and mixed lard, offered as pure, should be rigidly excluded.

For a time, a few years ago, when a popular fad prevailed in favor of nitrogenous foods, the true value of fats to the digestive and nutritive economy was not well appreciated. At the present day this is all changed, and we know how to value a fat properly.

It is therefore a matter of no mean importance to protect the public in the use of olive oil instead of cotton oil, of cotton oil instead of lard, and lard instead of a mixture of beef and cotton-oil stearine. It is true that cotton oil, when carefully refined, is almost as good a salad dressing as olive oil, but it is very much cheaper, and those who prefer to pay the high price should be secured against fraud. In respect of wholesomeness and digestibility it would be hard to choose wisely between the two.

One of the great difficulties in securing the enactment of a national pure-food bill has been the feeling in cotton-growing regions that such a bill would restrict the market for cotton oil. This is true if the fraudulent market is meant. By that I mean the surreptitious sale of cotton oil as olive oil and as lard. But such a bill would not interfere in the least with the legitimate market for this product. Cotton oil,

as a food, has such merit of its own as to warrant the belief that it does not require any smuggling to secure for it a wide and rapidly increasing use. The South as well as the North would be the gainer from honest markets for honest foods, and it is a short-sighted policy that leads to a crusade against such legislation as will secure the desired result. It would be a rather unfortunate thing for the whole country should an irrepressible conflict between the *sus* and the *gossipyum* keep our interstate market forever open to mixed or doubtful fats.

Sugar.—The common idea that the grocer puts sand in his sugar is not borne out by the facts in this country. I doubt whether a single pound of white sand has been put into the sugar supply of this country in the last ten years. It is one of those popular fallacies which gain credence inversely proportional to their truth. The granulated and white lump sugars which are found in our markets are almost absolutely pure; as pure indeed as the utmost care in manufacture can make them. Occasionally a little flour or starch may find its way into the powdered sugar, but such instances must be exceedingly rare. Low-grade sugars contain molasses and water as a result of the way in which they are made and dried. In the refineries, after the pure white sugar has been secured, the molasses therefrom is reboiled and a second crop of sugar crystals obtained. These form the so-called coffee sugars of commerce. In a like manner a third crop of rather light-colored crystals may often be formed. By a combination of low temperature and high vacuum in boiling, and by a manipulation producing small crystals, a sugar can be made very soft, and, so prepared, it absorbs a good deal of the mother liquor in which its crystals grow. It is possible, in this way, to put on the market a fairly light-colored and attractive sugar, which may not contain more than 85 per cent of pure sugar. This process of making low-grade sugars is practiced chiefly with the product of the sugar cane. In sugar from beets the molasses and mother liquors are usually so highly charged with alkaline salts as to render the manufacture of low-grade sugars, fit for table use, a very difficult matter. In this country, as is well known, the greater part of the sugar consumed is made from sugar cane. Of the 4,000,000,000 pounds which we have eaten in the last twelve months, probably 3,500,000,000 have been grown under tropical suns. The proportion of yellow, coffee, and low-grade sugars offered is, therefore, greater in our markets than in Europe, where the sugar beet supplies nearly all of the sugar consumed.

Sirups.—In respect of molasses and sirups the bill of health is not quite so clean. The quantity of pure maple sirup sold annually is well calculated to make the maple forests of Vermont prick up their ears. A very little maple molasses mapleizes the whole jugful, a fact that makers and sellers have not been slow to learn. An extract of hickory bark imparts a misleading flavor to a sirup made from cane sugar and starch, and a patent has been granted by the United States protecting the discoverer of this process in the exercise of his invention. Judicious mixtures of glucose, sugar, sirup, and maple flavor are the secrets of the marvelous expansiveness of maple molasses between the tree and the gullet.

“Golden drips,” “honey sirups,” etc., are names given to compounds made of refinery refuse, glucose, and centrifugal cane molasses. The great base of all our table sirups is glucose made from corn starch. I am far from denouncing glucose as a dangerous ingredient in such

mixtures. On the contrary, when glucose is properly made it is both palatable and wholesome, but its sale as maple molasses or as refiner's sirup or as open-kettle molasses is clearly fraudulent.

Honey.—Liquid honey is very largely adulterated with glucose. Of 500 samples of honey bought in fifteen large cities and examined by the chemical division of the United States Department of Agriculture nearly 45 per cent were found to be fraudulent. Of comb honey only that is adulterated which comes in bottles or jars. A few years ago there was a popular impression, which I shared, to the effect that comb honey in the frame was adulterated, but no sample of this kind has ever come under my observation, and I am convinced that such a species of adulteration does not exist. Perhaps there is no class of food producers in the country whose business has been so seriously injured by adulteration as the bee growers. Many of them, however, do not seem to realize the magnitude of the frauds which are perpetrated against them. They have often been known to denounce as attempts to injure their business the statements that such frauds are practiced. Of late, since indubitable evidence of fraud has been presented to them, they have determined to use every means to end it.

Coffee.—Almost equally subject to adulteration is ground coffee. The high price of coffee is a special incentive to sophistication. In former days it was largely the custom to buy the green berry, and each customer would do his own roasting. Now it is fashionable not only to buy the roasted berry, but also to buy it in a ground state. Chicory, roasted pease, beans, etc., are often found in large proportions in such preparations, and, in fact, it is somewhat rare to find a pure ground coffee. It might be held that such sophistication would end with the ground article, but such is not the case. The berries themselves have been imitated both in the green and in the roasted state. The moistened mass of chicory, starch, pea meal, caramel, molasses, etc., is molded into the proper shape, and when dried these imitations might easily escape detection when mixed with the genuine berries. Those who are so fortunately situated as to be permitted to live at home and regale themselves each morning with an aromatic cup of Mocha or Java scarcely realize what it means to drink a lukewarm concoction of chicory and pea meal, bluish black in color, but decidedly yellow in flavor.

Tea.—Thanks to our customs laws, very little tea is found in this country adulterated with foreign leaves. The chief adulterations practiced with tea are found in the use of spent leaves and in the practice of facing. The practice of facing consists in treating the leaves with some preparation designed either to increase their weight or to improve their appearance. Salts of iron and copper are often used for this purpose. Some of these facing materials are quite prejudicial to health, and such teas are best excluded from the breakfast table.

Cocoa.—Cocoa and chocolate are largely adulterated with starch and sugar, harmless in themselves, but far cheaper than the meat of the *Cocoa theobroma*. The natural oil of the cocoa bean is also often extracted and its place supplied by a cheaper fat or left without an oil. These various preparations are offered under fancy names and with wonderful claims of excellence. But in general we may say that the food value of a preparation is not much improved by having it digested before it is eaten. Yet often we see it claimed for a given mixture that it has had all of its difficultly digested components removed and

that these are replaced by others with which the gastric juice can have a veritable picnic. The digestible cocoas often belong to this class, and, perchance, may have little of the virtues of the original beans left in them.

Canned foods.—Of canned foods I should like to say something, but it is difficult to select the little which can yet be said. First of all, the material of which the cans are composed is a matter to deserve attention. It is undoubtedly true that glass is the ideal substance for cans designed to preserve food products; but the first cost of these packages and the danger of breakage during filling and transportation exclude them from competition with tin in all except the choicest brands of preserved foods. Fortunately, tin is a metal which is not only troublesome to the tariff, but also resistent to most organic acids. It is acted on very slowly or not at all by most organic acids found in fruits, vegetables, and meats. In some countries, such as Germany, the tin which is used in contact with canned foods is required to be almost pure and to contain not more than 1 or 2 per cent of lead. The most abundant adulterant of tin as found in tin cans is lead, and it is against the presence of lead that it is especially necessary to guard, inasmuch as the organic salts of lead, without exception, are poisonous. In this country of personal liberty there is no restriction as to the percentage of lead which tins used for canned foods may contain. We have found as high as 12 per cent of lead in tin from cans which have contained food designed for consumption. Such a high precentage of this dangerous metal can not fail to excite alarm. We have also found numerous evidences of erosion on the tinned surfaces exposed to the action of the contents of the can. The contact of the preserved goods with solder should also be carefully prevented, inasmuch as solder contains often as much as 50 per cent of lead. It is very common, however, to find lumps of solder in the canned goods and also to find the solder protruding through the points of union of the can and cover so as to be exposed to the action of the contents.

Copper in pease.—Equally objectionable is the habit of using copper salts to impart a bright green color to canned pease and other goods. The imported French pease are uniformly colored with copper. The addition of a little copper in any vegetable which it is desired to keep green when served has a happy effect in that direction, and fashionable cooks have not been slow to learn this. It is true that the quantity of copper which one would eat in a single meal where French pease are served would not prove greatly injurious, but on that large part of our population who are compelled to dine every day on truffles and pease, interspersed with terrapin and champagne, there is great danger of the copper acting with accumulative effect.

I have already spoken of the danger which may lurk in preservatives such as salicylic acid, but there is also an occasional source of danger in the development of nitrogenous bodies, called ptomaines, in preserved meats. These bodies may develop with astounding rapidity if a can of meat be opened and not eaten for a day or two. An illustration of the fatality of the action of such bodies is unfortunately often found in the case of tyroxicon, a poison often developed in milk or cream.

The above will serve as illustrations of the more common forms of adulteration to which our foods are subjected. The idea might be formed from this array of facts that foods are almost all adulterated

and that it is extremely difficult to obtain anything pure. Newspapers love to magnify these accounts of adulteration. What I have placed before you has not been for the purpose of exciting a panic on the subject of foods. Much the greater part of foods which Americans eat is pure and wholesome. It is only the small quantity of adulterated food from which we should strive to protect ourselves. This exaggeration of the adulteration of food has been humorously portrayed by Burdette in a little scrap of rhyme entitled—

A VICTIM OF DELUSION.

Placid I am, content, serene.
 I take my slab of gypsum bread,
 And chunks of oleomargarine
 Upon its tasteless sides I spread.

The egg I eat was never laid
 By any cackling, feathered hen;
 But from the Lord knows what 'tis made
 In Newark by unfeathered men.

I wash my simple breakfast down
 With fragrant chicory so cheap;
 Or with the best black tea in town—
 Dried willow leaves—I calmly sleep.

But if from man's vile arts I flee
 And drink pure water from the pump,
 I gulp down infusorïæ,
 And hideous rotatoriæ,
 And wriggling polygastricæ,
 And slimy diatomaceæ,
 And hard-shelled orphryocercinæ,
 And double-barreled kolpodæ,
 Nonloricated ambreilæ,
 And various animalculæ,
 Of middle, high, and low degree;
 For nature beats all creation
 In multiplied adulteration.

Even the conservative work of the Department of Agriculture in investigations of food adulteration, which I have had the honor to conduct during the past six years, becomes most highly sensational material when portrayed in the columns of the daily journal. In the Philadelphia Star, of recent date, appeared the following remarkable statement of the work of the Chemical Division.

Glucose, it appears, is the greatest of all adulterants. It is used for making cheap candy, sugars, jellies, and sirups. Apple sauce is pumpkin boiled in cider. It is said that the cheap confectionery and liquors are the articles most injuriously adulterated. Candy commonly contains much fusel oil and other poisons. Strawberry ice cream—a plate of it—often contains almost more fusel oil than five glasses of poor whisky. It is colored with red aniline dye. Licorice drops are usually made out of candy-factory sweepings. Wine is frequently nothing but water with a percentage of crude alcohol from grain or the refuse of beet refineries, colored with burnt sugar, flavored with oil of cognac, and given an agreeable woody taste with a little catechu. When one buys tea for \$1 a pound, one is very likely to pay in reality \$2 a pound, because one-half the quantity is currant leaves. Grated horseradish is sometimes composed of turnip. Flour is frequently weighted with soapstone. Sweetened water, sharpened with citric and tartaric acids and flavored with the oil of orange skin, makes orange cider. Real honey can be distinguished, under the microscope, by the pollen grains it contains. They have wonderfully beautiful forms, and the very flowers from which the honey was obtained can be identified by the various exquisite shapes of these fructifying germs.

The above startling facts in regard to adulteration, which are attributed to the Department of Agriculture, are worthy of especial notice because not one of them was ever abstracted from any report of the Department. Scarcely a single instance of the adulterations mentioned above has ever been observed and reported on by the chemists of the Department. Thus it is seen that the popular idea of adulteration is really very much at fault, and this has been due largely to the exaggerated statements of presumably honest men who desire to call attention to the fraud and to prevent it by exciting the popular mind against it. The adulteration of our foods and drugs is certainly bad enough, but in my mind it does no good whatever to exaggerate, falsify, and misstate the results of careful and unbiased investigations. As has before been intimated in this address, the remedy against all these things lies clearly in the hands of the people. Wise laws wisely administered, a careful system of inspection, a demand for pure food, will secure the people in their right. It is not the rich for whom we should work, but the poor, and they should be protected against frauds in food; frauds not so dangerous on account of being deleterious to health as because of their pretensions to furnish to the poorer part of our people a food ostensibly pure and nutritious, but in reality valueless. It is not supposed for a moment that any system of legislation can entirely prevent the perpetration of frauds upon the community, but at least these crimes can be made punishable and their perpetrators may be compelled to endure the penalty of their misdeeds.

EXHIBIT 8.

FOOD ADULTERATION IN ITS RELATIONS TO THE PUBLIC HEALTH.

[H. W. Wiley, M. D., Ph. D., Washington, D. C.]

MR. PRESIDENT, LADIES AND GENTLEMEN: The conservation of the public health is a duty which is not peculiar alone to the medical profession. While the world looks to those of us, who have received medical training and have taken medical degrees, for instruction in hygiene and the rules which should regulate life, the popular idea of the physician is rather one to whom appeal is made when the health is broken and disease has seized upon the vital organs. Nevertheless, in spite of this popular impression of the functions of a physician, the world is turning more and more to the physician for information on all subjects which pertain to health and longevity.

The desire to live to "a green old age" should also be accompanied by the effort to make this life as free from disease and suffering as possible. A prolongation of life which means simply the prolongation of an invalid's life is not one to be greatly desired. The economics of valetudinarianism are matters of some moment because the invalid is a burden either to himself, to his friends, or to society at large. The ideal of life, the one which results in work accomplished and in progress achieved, is, other things being equal, a healthy life. I make this statement with a full knowledge that many great works have been accomplished by invalids. Sometimes it may even be said that sickness is the prime cause of great achievements, since it isolates the invalid from contact with the world and enables him to concentrate his powers upon a single object. But sickness is not necessary to secure concentration of thought and purpose; these can be far better accomplished by the forces of will and the law of habit.

The physician need not be deterred from teaching the laws of health because he fears that he may diminish his professional activity. It requires a certain amount of sickness to kill an invalid, and if this be extended over a period of eighty years the physician will make as much out of it as he could have accomplished in forty, so that from a mere business point of view there is no reason why the physician should not be the teacher of hygiene.

Among the many factors which have a great influence upon the health of the individual there is none more potent than food. Eating is the chief industry of the human race. In this country there are about thirty million wage-earners, drawing about twenty-five million dollars a day. Of this vast sum fully three-fourths is applied to the purchase

of food and its preparation. It seems to me, therefore, that a subject which monopolizes three-fourths of the energies of the human race is one which is well worthy of discussion, and especially among a body of physicians who have banded themselves together, not particularly for the curing of disease, but for the more beneficent purpose of conserving the public health.

Often even wholesome foods may be administered in such a way or in such excessive quantities as to injure the health of the consumer. If this be true, how much greater must the danger be if the food offered for consumption be changed in its nature, so as to become a positive poison, by the addition of foreign bodies? Perhaps there is no one evil now prevalent in this country, not even the intemperate use of alcoholic drinks, which has more vital importance to the health of the people than the adulteration of our foods.

In the short time allowed to this paper I can not enter into an elaborate discussion of the nature and extent of food adulteration, but must confine myself closely to the question under discussion, the influence of this adulteration on the public health.

Not long ago I stated before the Senate committee investigating the adulteration of foods that all adulterations of human food might be comprised in three classes. The first I described as adulteration with bodies which are inocuous or harmless; the second, the addition of positively injurious bodies; and the third as the abstraction of some valuable constituent from the food, and either leaving the food without this constituent altogether or replacing it by one less valuable.

A distinguished gentleman who followed me on the witness stand took exception to the classification I had made, saying that in his opinion there was no kind of adulteration which was not injurious to health, and that therefore the first class mentioned by me was just as objectionable as the other two. During the last few months I have thought a great deal on this point and have almost come to the conclusion that my friend was right in his view. I will illustrate the classification, however, by pointing out a few well-known adulterations of each of the three classes I have just mentioned.

It is well known that flour made from wheat has been largely adulterated in this country by the addition of purely starchy matter derived from Indian corn. Now, I can not regard starch as injurious to health, and hence the addition of a starchy body to the flour of wheat is in this sense not an injury. Physiological chemists, however, have discovered that there is a certain balance in the foods of man which should not be disturbed. In other words, there is a definite relation between the quantities of protein, fat, and carbohydrate matters which, when sustained, renders this mixed food most nutritious, and therefore most economical. Bread made from wheat flour, especially if it be made as nearly as possible from the whole grain, is recognized by physicians and physiologists as being practically a complete human food, with a certain definite ratio existing between the protein matter which it contains and the fats and carbohydrates. It is evident at once that the addition of other starchy matter will disturb this ratio, and thus render the food less economical, by increasing enormously one of its constituents without changing the quantities of the others. For the ordinarily healthy stomach such a change in the food would be of no consequence whatever, but we can readily imagine cases where, with the disturbed digestion and imperfect secretion of the

enzymes which produce fermentations characteristic of the digestive process, the increase in the amount of starch would produce a positive injury. We know that starch is digested first in the mouth by the action of enzymes of a diastatic nature, secreted by the salivary glands. The slight alkalinity of the digestive fluid favors the action of the salivary enzymes. When the food reaches the stomach, in natural digestion, it becomes acid under the action of the hydrochloric acid secreted by the glands of the stomach. The enzymes of the peptic ferments are also secreted in large quantities and act rapidly upon the protein matter of the food, converting it into peptone. This action is favored by a slight acidity. It is evident, therefore, if the digestion of the starch does not proceed under the most favorable conditions in the stomach, any excess of starchy food may interfere seriously with proteolysis. In other words, the amylolytic ferments and the proteolytic ferments do not reach their maximum activity in the same environment. The mixing of Indian corn starch, therefore, with wheat flour, while it is an adulteration of the first class, being the addition of a harmless or innocuous substance, may in the cases mentioned above become a positive injury to health.

Another illustration which may be cited is in the case of the glucose of commerce. Now, the glucose of commerce is a mixture of dextrose and dextrin with a small quantity of maltose, produced by the artificial hydrolysis of the starch under the influence of an acid. It is well known that the starch in foods must undergo a similar hydrolysis, under the action of the diastatic ferments, of the digestive organisms before it can be assimilated and act as a nutrient for the body. From this fact it might be inferred that a partial previous digestion of the starch by an artificial hydrolysis, such as is referred to above, might be of advantage. This, however, can not be seriously admitted. It is a well-established principle in physiology that the disuse of organs tends to produce atrophy and eventually functional paralysis. Hence, if the starchy foods are replaced by artificially digested starch, the organs which produce the diastatic ferments to hydrolyze the starch are deprived of a part of their functions and must suffer from disuse. It is evident, therefore, from this point of view, that the use of predigested starch is to a certain extent prejudicial to the health of the digestive organs. Where the digestive ferments are deranged and the digestion of starch rendered difficult, the addition of predigested foods may be useful, but these should not be substituted for the natural foods, except on the recommendation of a competent physician. Again, there may be objections to the use of glucose from another point of view. This substance is, as is well known, largely used as an adulterant for honey and jelly. Honey owes its value to the peculiar flavor which it possesses, due to the aromatic substances derived from the flowers and possibly to traces of formic acid, obtained from the digestive organs of the bee. In other words, honey is not prized simply because it is a carbohydrate, but because of its flavor. Whenever, therefore, glucose is added to honey, by the substitution of it for the aromatic substances above mentioned, the peculiar flavor is destroyed and the honey is to that extent less desirable. So here is another instance in which the introduction of a perfectly harmless substance in food may render it positively injurious.

I would not multiply illustrations of this kind, but, in general, it may be predicted of all such adulterations, with harmless or innocuous substances, that they may be comprised within my first class.

When we come to the second class of adulterations there is less ground for dispute. Here I think no physician will fail to condemn the use of bodies in foods which are positively injurious. The excuse usually urged for the use of these bodies is that they are in such minute quantities that they can not possibly be injurious. This I readily grant is valid for healthy stomachs of individuals who are in the prime of life and who are in the full possession of all their powers; but it can hardly be general in its application.

Adulterants of this class are best illustrated in the use of preservatives. For economical reasons foods are not always consumed on the spot where they are produced nor at the time of their production. Many foods are of a perishable nature and if not consumed at the time of their maturity are lost. To render these foods serviceable through the entire year, and in localities widely separated from the place of their origin, some method of conservation must be employed.

There are two methods of food preservation which are perfectly natural and permissible. One consists in the complete desiccation of the food so as to prevent the fermentation which produces decay. The second method is to subject the food to a pasteurizing or sterilizing temperature for a time sufficiently long to destroy the germs of fermentation. The foods thus pasteurized or sterilized are prevented from coming into contact with the air, and thus by excluding the fermentative germs they can be preserved indefinitely. Both of these processes are to a certain extent troublesome and expensive, and hence dealers in foods have sought to accomplish the same result by a shorter and easier course, namely, the employment of certain chemicals which have the property of retarding, paralyzing, or destroying the activity of the fermentative germs. All food preservatives act essentially in the same way.

It is well known that there are a great many substances which possess neither taste nor odor, and which have this retarding action upon the fermentative germs. The addition of these bodies to foods secures their preservation and at the same time does not impair their flavor. Among the preservatives which have been commonly employed in this way may be mentioned sodium sulphite, boracic acid, borax, potassium nitrate, sodium chloride, sodium silicofluoride, potassium fluoride, sulphurous acid, formaldehyde, salicylic acid, benzoic acid, abrastol, and saccharin. A glance at these substances will show that they are of two general kinds, those of an inorganic nature, which are mentioned first, beginning with sodium sulphite, and those of an organic nature, beginning with formaldehyde. I have omitted all preservatives which on account of odor or taste could not be conveniently used in the preservation of human foods.

It will be noticed that some of the bodies in the first class are of a condimentary nature, and therefore can not be rigidly considered as food preservatives. We must not exclude from foods the condiments with which we are familiar. They are necessary and desirable, although being of themselves of little food value, and hence the use of any one of the bodies mentioned above, in a condimentary sense, can not be considered reprehensible. Of the bodies mentioned above those which are most commonly used as condiments are common salt and potassium nitrate, the latter, however, to a very limited extent.

In the second class the only one which is used in the condimentary sense is saccharin, and that only as a rule in the case of persons suf-

fering from diabetes, where the use of a carbohydrate in the food is deemed inadvisable, and where the patient craves a sweet taste in his food. In the case of this condiment I can not speak favorably, since, under any circumstances, I consider its use highly injudicious and injurious.

In general it may be said that all decay of foods is due to germ action. I can easily remember the time when it was supposed that the decay of organic matter was due to oxidation by the air, but since the time of Pasteur this idea is no longer entertained. The sole function of the addition of preservatives, therefore, is to paralyze or suspend the germ action, and thus preserve the foods from decay. On the other hand, we should not forget that the process of digestion is essentially a fermentation from beginning to end. The splitting up of the organic food elements into simpler forms, which can be assimilated and utilized in the system, is due solely to the action of ferments belonging to the general class of enzymes.

The decay of foods is due to fermentative action, caused by organisms, capable of reproducing their kind, and to the enzymes, which are secreted by the living organ. The process of digestion in the alimentary canal is due almost solely to the latter cause, the action of the germs capable of self-reproduction being extremely limited, and even doubtful. It may be stated, however, that any substance which has the property of suspending or retarding the action of germs capable of reproduction has a similar action upon the enzymic ferments. Therefore it follows that when these substances, which are added to preserve foods, reach the alimentary canal their paralyzing action will continue during the process of digestion. Hence, this broad principle should be enunciated, as being definitely established, that all substances which are capable of preserving foods have also the property, to a certain extent, of retarding the processes of digestion.

The question therefore arises should the use of preservatives in foods be absolutely prohibited. I for one do not believe in prohibition of any kind. To my mind every human being should be left absolutely free to choose for himself what he should eat and what he should drink. If, therefore, my neighbor is fond of food preservatives, I, for one, have no desire to prohibit his indulgence therein. My duty, and it seems to me and that of every other teacher of hygiene, is to protect the innocent party who has no desire to eat adulterated foods. So far as I am concerned, therefore, and so far as the public health is concerned, it would be sufficient to permit the use of the least harmful preservatives, on the condition that the kind and amount of the preservative employed be marked in plain letters on every package containing it. When it comes to positively injurious preservatives, however, which even in minute quantities are injurious to health, then I, too, almost become a prohibitionist, and would favor the restriction by national or State laws of the use of such substances in human foods.

It is claimed, for instance, by many competent hygienists and physiologists that a moderate use of borax or boracic acid in butter is of a condimentary as well as of a preservative nature, and does not in any way tend to interfere with the process of digestion. Claims made in this manner are worthy of consideration. It seems to me, therefore, that it is eminently proper that this body of physicians assembled in the interests of the public health should petition the Congress of the

United States to enact one of the many pure-food measures which have been brought to its attention into a national statute, and provide at the same time for the appointment of a commission composed of physicians, physiologists, and chemists to study the nature of all proposed food preservatives and to determine which, if any, should be permissible in human foods.

There is one other form of food adulteration to which the attention of this body should be called, and that is the artificial coloring of foods. Artificial colors are now used to a large extent in human foods, chiefly in butter and oleomargarine, canned meats, and preserved vegetables. Butter and oleomargarine were formerly colored yellow with turmeric. The introduction of the coal-tar dyes provided a cheaper coloring matter, and one of the azo dyes, tropaeolin, which gives a bright yellow color and at a smaller expense, has almost entirely replaced the vegetable coloring matter first mentioned. As a result of this use, turmeric has practically disappeared from the dairy, and the synthetic yellow has taken its place. I would regard the use of coal-tar compounds as practically in the same category with the organic preservatives above mentioned. While I would not go so far as to prohibit the use of coloring matters in dairy products, I am sorry to say that their use is carried to such an extent as to excite apprehension. In many of our first-class hotels and restaurants the butter is colored a deep saffron tint, totally unlike the delicate light yellow tint which the best natural dairy butter possesses. To my mind the dairyman would do far better to regulate the food of his cows so that his butter would not require artificial coloring matter. In summer this can be easily accomplished by paying careful attention to the grazing of the animals, and in winter can be secured by feeding them root crops, especially beets and carrots, in sufficient proportions to give the proper color to the cream and at the same time to increase the flow of milk and preserve the health of the animals. In so far as oleomargarine is concerned, it appears to be entitled to no color at all, but if color is desired it must be secured by some of the methods mentioned.

For the coloring of sausages and preserved meats the coal-tar products are chiefly employed. The following is a list of some of the colors which have been used: Bismarck brown, buffalo brown, double scarlet, rouge I, and a red coloring mixture composed of common salt, sodium nitrate, borax, and carmine.

The addition of nitrate of soda and nitrate of potash to sausages and meats tends to preserve and at the same time to intensify the red color of the meat. I believe that potassium nitrate is uniformly employed by all packers of corned beef, so that it may be considered as a normal constituent thereof.

The green color of peas and beans and other green vegetables, which are preserved by sterilization, is fixed by the use of zinc and copper salts. These bodies act as a mordant, entering the tissues of the green plants and fixing the chlorophyll, by preventing its transformation into xanthophyll, which would otherwise occur on long keeping. Green peas which are pasteurized without the addition of zinc or copper become yellow by the production of xanthophyll, while if zinc or copper salts be employed the green color is preserved indefinitely. It is well known that zinc and copper salts are not particularly wholesome; hence their use in preserved vegetables is to that

extent reprehensible. How far we should sacrifice our esthetic ideas, as to what food should look like, to purity must be determined by each one for himself. It appears to me that it would be a sufficient protection to the public to require that every package of preserved vegetables containing copper and zinc salts should have that fact plainly marked upon the label.

Examples of food adulteration which arise from the extraction of some valuable ingredient from the food and the substitution of a less valuable ingredient are also very numerous. The removal of cream from milk before it is sold is a very good illustration of this kind of adulteration. Happily, in most of our large cities at the present day, the milk inspection is so rigid as to practically prevent such adulteration. The laws of most of our large cities require that the milk offered for sale shall contain not less than a certain quantity of fat. The minimum limit is usually 3 or $3\frac{1}{2}$ per cent. The content of fat in the milk from a Jersey herd of cows often reaches 5 per cent. It is thus seen that the thrifty dealer can remove two-fifths of what the natural milk contains and yet sell his article in conformity with the statute. Nevertheless, the removal of this amount of fat is in every sense of the word an adulteration, and should receive the same punishment as if it were extended until the limit fixed for the fat had been transgressed.

The use of skinned milk in cheese making, with the addition of lard and cotton-seed oil, is another illustration. Such a product is known in the trade as "filled cheese." Another common substitution is that of cotton-seed oil for olive oil, which has been practiced to an enormous extent in this country. This, to my mind, is a clear case of an adulteration which is not injurious to health. I consider cotton-seed oil perfectly wholesome, as much so as olive oil. The fraud in this instance is purely a monetary one, but the offense is just as great and the punishment should be as severe.

From this brief summary of some of the methods of food adulteration, it is clearly seen that the practice of frauds of this kind is usually more to be regarded from a monetary point of view than as prejudicial to the public health. Traffic in adulterated foods between the States and Territories should be regulated by an act of Congress, while the legal regulations for the commerce in and sale of these foods should be left to the boards of health of the various States. If national legislation could be brought to act in harmony with State legislation on this subject, a complete control of traffic in these foods could be instituted, which would be an ample protection of the public, both as far as its pocketbooks and health are concerned.

I will close with one word of warning. When a public audience hears a discussion on the subject of food adulteration, it is likely to form wrong notions in regard to the extent of this evil. Exaggerated impressions are formed and expression is often given to them. One would think from some of the articles which have appeared in the newspapers that it would be quite impossible to secure a pure food in any of the markets of the United States. Nothing could be more erroneous than this idea. Most of the foods which are offered on our markets are perfectly pure and wholesome. If one should go into one of our great cities to-day and purchase one hundred articles of food at random, perhaps less than 5 per cent of them would be found to be adulterated; but because the percentage of food adulteration is small, there is no reason to minimize its evils.

The sole objects of food adulteration are to sell an inferior article at the price of a superior one and to preserve a good article, so that it can be sold after preservation at the same price or at a higher price than it would bring in its natural fresh state, and to secure this object reprehensible methods are employed.

I would not say or do anything that would make the price of the food higher for the working man or the poorer classes of this country. I am a thorough believer in the production of oleomargarine and the sale of it as such to those who desire to pay a less price than pure butter commands, and in like manner anyone who prefers glucose to honey, simply because it is cheaper, should be allowed to gratify his taste. My plea is that foods should be sold everywhere for what they are, while the greatest liberty is granted in their manufacture and preservation compatible with the public health. Only where actual injury is done should prohibition be practiced, but up to this point a plain marking of the food containing preservatives or adulterants of any kind, under the proper operation of the State and national laws, would be entirely effective.

STATEMENT OF F. B. THURBER.

MARCH 11, 1902.

F. B. Thurber, president National Pure Food Society, 90 West Broadway, New York, said :

BASIC PRINCIPLES.

Articles that are injurious to health should be prohibited. Articles that are not injurious but of inferior grade should be sold for what they are.

APPLICATION.

Somewhere must be lodged the power to determine what is injurious, and I think this safer in a department of the Government with a Cabinet officer at its head rather than in an independent bureau the head of which is responsible only to himself. Even in the former case the difficulties and technicalities are so great that a jury of experts is required to determine standards and mooted questions in order to adequately protect the public health and not unnecessarily embarrass trade.

UNIFORMITY.

Uniformity in our food laws is very desirable, and a national law would furnish a standard to which State laws would gradually conform.

COMPETITION AND PUBLICITY GREAT FACTORS.

Competition, with authoritative publicity, will remedy most of the evils which exist. There are sins against the health and sins against the pocket of the public. Both grow in the dark, and neither can exist in the light of publicity. Competition in the dark drags down. Competition in the light elevates. The "just as good" manufacturer who sells at a lower price usually debases standards, and the manufacturer who has attained a deserved reputation should be protected as well as consumers.

Locality is a factor. Some goods are best produced in particular localities. Other localities can produce them more cheaply, but not as good. They should not be allowed to misrepresent the place of origin. It is the right of the consumer to know where the goods are produced, and goods should be honestly branded.

STATEMENT OF HON. GEORGE H. BARBOUR, PRESIDENT MICHIGAN STOVE COMPANY, OF DETROIT, MICH.

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE: I appear before your honorable committee in the interests of the Western manufacturers, urging the passage of the Nelson Senate bill.

The extent and importance of the manufacturing interests of the country at the present time, and its increasing volume, warrant, in the mind of the thinking man, a representative in the Cabinet of the President of the United States. We have reached the point where other countries acknowledge that we are the most important manufacturing center in the world, and while we are adding to our present plants to increase production we are also building new manufacturing institutions all over the country, and especially in the West, where, a quarter of a century ago, we were new in certain branches of manufacture.

To-day we in the West excel in many lines of manufacture, while in the East, North, and South they have progressed largely in the manufacture of leading articles which are not only sold in the United States but in foreign countries. In my opinion it is only a matter of a few years until the American manufacturer can boast of a large foreign trade, and what does this mean to us? This country of ours at certain periods meets with business depressions. We produce rapidly, and, being governed largely by supply and demand, there are times when if we could get the relief offered by the disposal of surplus stocks to other countries we would escape the condition which we have experienced in the past.

A mutual understanding between labor and capital is, in my opinion, essential to the success of each, and for the sake of peace and harmony good feelings should always exist between them.

The manufacturers of this country have no desire to ask for unreasonable things; but their great interests, which are of so much importance to the people of the United States, demand your careful consideration of the bill in question. I believe that the Department of Agriculture has been of general benefit to the farmer at large, and I also believe that the department of commerce and labor, if created, will greatly assist the Agricultural Department, for the reason that if the manufacturer is not prosperous, he is unable to give employment to a large number of people; and when this condition exists the laborer is not able to earn his usual amount of wages, consequently he has to curtail in the purchase of the products of the ground, and then both the manufacturer and farmer are seriously affected. When we have a condition where both the manufacturer and the farmer are prosperous, we must necessarily have prosperous times.

The benefit to be gained by the creation of this department seems to me to be great. All other countries have a department of this nature, and why should not we, a country second to none, becoming more popular day by day; and fostering, as we are, and looking forward to an extended trade in foreign countries, should we not be able to refer them to this department represented by a Cabinet official in Washington?

As to the foundation principles governing this office there may be some difference of opinion, but it appears to me that section 3 of this bill is about all that will be found necessary. It goes without saying that the chief of this department will from time to time be able to suggest important changes, and he can doubtless so arrange the work that additional benefits will accrue, as he will be fully competent to give this office the benefit of such experience as he may have had, as I conclude the person selected to this office will be one of wide experience, possessed of ability, who would give to this office every advantage.

I do not know as it is necessary for me to say more on this subject.

It is one of such great importance that I believe your honorable body will conclude there is nothing against the creation of this department, but everything in its favor.

Believing as I do that it is of the greatest importance that the manufacturers of this country should be represented as set forth in the Nelson bill, I urge you to give it the careful consideration called for, feeling assured that you will receive the support and the thanks of every prominent manufacturer of this country, and that both labor and manufacture will be greatly benefited by the creation of this Cabinet office.

STATEMENT OF F. N. BARRETT.

(*Editor American Grocer.*)

I appear before your committee in the interest of a national pure-food law, as a measure to give to the people ample protection against the manufacture and sale of unwholesome food, and secondarily as a preventive of fraud. Ever since the beginning of the movement for pure-food laws in 1880, as editor of the American Grocer, the oldest journal of its kind in the United States, I have been conversant with the subject, and have become convinced that a national pure-food act is required if State laws are to be made effective. I feel certain that every interest here represented desires such legislation. We all aim at the same object, and whatever differences of opinion, if any, exist are honestly held and are largely due to variation in experience and desire.

The advocates of pure-food legislation, whether State or national, are practically agreed that the law should absolutely prohibit the sale of all foods known to be deleterious to health, and that all articles of food should be sold under such designation as would show their true character to the purchaser.

There are food laws in nearly every State and Territory based upon the first legislative food act passed in the United States—the general food law of New York in 1881. Unfortunately, the provision of that law, which gives it elasticity so that its ironclad definition of adulteration shall not make it an instrument of persecution, has been omitted from many State laws and ought to be incorporated in H. R. 3109. The result of this omission is such persecution as arose in Ohio under Commissioner McNeal. The irreconcilable differences in the rulings of the food commissioners of the various States make it particularly desirable that an equitable national pure-food law should be framed with the object of having all State laws brought into harmony with its provisions and thus relieve the food manufacturers from the unjust exactions and unwarranted expense they are now put to by reason of differences in rulings.

The bill known as H. R. 3109, introduced by Mr. Hepburn, is, with few exceptions, identical with the bill introduced by the late Hon. Marriott C. Brosius, which measure received the unanimous indorsement of a pure-food congress which assembled in the city of Washington during the last session of the National Congress and in previous years. This was the most representative body of its kind ever assembled. It was presided over by the present food commissioner of Ohio, and there were present the food commissioners of many States, repre-

sentatives of State boards of agriculture, State boards of health, manufacturers, brewers, a large delegation representing the wholesale and retail grocers, dairy interests, bee keepers, and almost every interest identified with the food industry.

The Brosius bill was gone over section by section, and when finally amended was presented to Congress as being satisfactory to all interests, and the best act that could be obtained. Subsequently a few changes were made in the measure, one of which is of doubtful value and to my mind ought to be eliminated, viz, page 7, lines 17 to 22, inclusive, and which read as follows:

Provided further. That substances which enter into the preparation or preservation of food, and which change their chemical nature in the preparation of food, shall be branded at the time of manufacture with the names of the resulting substances which are left in the food produced when ready for consumption, together with the name and address of the manufacturer.

A very wise provision of H. R. 3109 is section 7, with possibly one exception on page 9, lines 8 and 9, which provide that the decision of the experts, "when determined and approved by the Secretary of Agriculture," shall become the standards to guide the parties charged with the execution of the act. If consistent with the relations existing between the executive and legislative branches of the Government, this part of the bill should be made mandatory. Such was the sense of the Pure Food Congress. I can not emphasize too strongly the merits of this section. It would provide that for which there is the greatest need, viz, standards. H. R. 9352 makes no such provision. I am more and more convinced that were this section alone enacted into law, it would go far to remedy the evils of food adulteration, contamination, sophistication, and manipulation. Every honest manufacturer and seller of food products would want his products to bear a stamp certifying that the article was up to the United States standard. The people, recognizing the good quality of the food, would soon refuse to buy only that bearing the Government stamp, and impure or unwholesome products would become a drug in the market.

I beg to remind your committee that the reason for having the law mandatory is that the scientific world is all at sea regarding the physiological questions involved in the use of preservatives and other chemical substances used in food, regarding which an array of professional testimony can be presented on both sides of every matter. There has never been, up to this time, any extended experiments to determine what effect the presence of salicylic acid, boracic acid, formaldehyde, sulphate of copper, saccharine, various preserving fluids, and other substances have upon persons in normal health or those out of condition. In view of this I suggest that it would be eminently unjust to leave the settlement of the questions involved in a food law to one individual. It is for this reason particularly that H. R. 9352 is objectionable. Section 4 of that proposed law leaves it with the dairy and food commissioner to approve or reject a formula, and to make public his reasons therefor. It gives him absolute authority over the entire food industry of the United States, and, in the hands of an indiscreet or unprincipled executive, could create a perpetual war of interests and might become a vehicle of blackmail.

Possibly your committee, in view of the irreconcilable rulings of the dairy and food commissioners of the different States, may deem it advisable to postpone action on these bills and offer one providing for a commission to study, experiment, and report upon this vexed question.

unless such authority is given under section 7 of H. R. 3109, in which case ample appropriation should be made for work requiring much time, and necessarily costly. An investigation was recently carried on by a parliamentary committee in England with unsatisfactory results. In a paper read before the national convention of the canned goods industry at Milwaukee in February, by Prof. S. C. Prescott, of the Massachusetts Institute of Technology, he said:

In the different States there are numerous laws regulating the use of these chemical antiseptics in foods. As these laws are different, a man might conceivably be acting within his rights in one State and violating the law by selling his product in another. At the present time the only way to be sure of being on the right side is by abstaining entirely from the use of antiseptics, for here, as in all things else, total abstinence is the only absolutely safe method of keeping out of danger.

It is probable, perhaps, that their use can not be prevented; consequently a national law regulating the use and restricting abuse of such substances is most to be desired. That this subject is of international or universal interest is made evident by the amount of discussion which has been given to it in England and on the Continent. The latest contribution is in the report of the committee appointed by the British Government to investigate the use of preservatives and coloring matters in foods, and which has been recently published.

The report of the committee is, on the whole, unfavorable to the use of preservatives, recommending that certain ones be entirely prohibited, and that others, when used at all, should be only in extremely small quantities, certain maximum limits being set, limits so low, by the way, that there might almost be no doubt in some cases as to whether any preservative action at all would take place. It is interesting to note that the report insists that no preservative of any kind should be used in any dietary preparation intended for the use of infants or invalids, and also prohibits the use of copper salts in "greening" of vegetables, although one member of the committee demurred in this judgment. Comment upon this excellent report is almost unnecessary, except to say that it emphasizes anew the unsettled state of the question and the necessity for much further experimentation before anything like a final verdict can be pronounced.

The prohibition of the use of preservatives in foods designed especially for infants and invalids betokens some suspicion on the part of the committee that there is no chemical preservative which is not objectionable under some circumstances.

In conclusion, let me reaffirm the necessity for more information upon this important subject. I believe it would be wise for such bodies as this association to take whatever steps may be within their power toward further investigating either by agitation for a national court of inquiry, similar to that recommended by the English report or otherwise. The Agricultural Department has already done much in this direction, but more could be done if the manufacturers of such foods would show a spirit of something more than selfish interest, and use their power to further the work. In my opinion, such action on their part would be fully repaid, even in a financial way.

I exceedingly regret that the National Retail Grocers' Association has seen fit to completely change its attitude toward the Hepburn bill and advocate H. R. bill 9352. For twenty years the retail grocers of the United States have earnestly advocated a national law on the lines of the Hepburn bill, especially that portion of section 6, page 8, lines 3-14 inclusive, which provides for a guaranty as a protection to the innocent vendor of an adulterated article of food, a feature advocated by organized retail grocers for the past fifteen years. The provision of H. R. 3109, section 1, lines 16 and 17, providing for the publication of the results of examinations and analyses of the work of the chemists, is a very desirable feature, as it secures publicity, the most formidable factor that could be employed to restrict the sale of adulterated foods.

Having secured these provisions the Brosius bill as presented by the Pure Food Congress to the House of Representatives was very acceptable to the manufacturers and purveyors of food. It did not suit

everyone in all its features, but was regarded as the best law that could be enacted under existing conditions, and therefore all united in supporting the bill, practically the same as H. R. bill 3109. It was unanimously indorsed by the National Retail Grocers' Association assembled in convention at Cleveland in 1900, at Detroit in 1901, and by many local grocers' associations. At the latter convention the following resolution was introduced by Mr. Scherer and was passed:

Resolved, That the National Retail Grocers' Association urge upon Congress the prompt enactment of a pure-food law, the fundamental principle of which shall be that the sale of all articles of food known to be deleterious to health shall be prohibited; that all other articles of food shall be sold under their true name or designation, and that it shall forbid the sale of any food or drug which is falsely branded as to the State, Territory, or country in which it is manufactured or produced; and that it shall contain a proviso similar to that in the English food and adulteration act, known as section 25, food and drug act, 1899; that no dealer shall be convicted under the provisions of this act when he is able to prove a written guaranty of purity in a form approved by the head of the department which may be charged with the execution of the act as published in his rules and regulations, signed by the manufacturer or the party or parties from whom he purchased said article: *Provided also*, That said guarantor or guarantors reside in the United States. Said guaranty shall contain the full name and address of the party or parties making the sale to the dealer, and said party or parties shall be amenable to the prosecutions, fines, and other penalty which would attach in due course to the dealer under the provisions of this act.

I regret that my associates in the pure-food committee of the National Retail Grocers' Association, as connected with former conventions, now differ with me regarding the proper sort of a national pure-food bill. I am inclined to think they entertain the idea that a national pure-food act would be operative in the different States and relieve them from unjust exactions of several of the food laws of the different States. If the Mann bill or any other national law is passed, I understand that it is wholly inoperative in any State, and that dealers in food are still subject to the laws of their respective States. The Hepburn bill if enacted would become a model to which State laws would in time conform. There is no danger of State laws being brought into harmony with the Mann bill. And as these differ very materially, and it is desirable to have them harmonize, it would seem the better policy to have them retrace their steps and again advocate a bill which they have so repeatedly indorsed, as they were instructed by the Detroit convention.

I am glad to know that the representatives of so many retail grocers' associations and the editors of almost all the grocery trade journals are a unit in supporting the main features of the Hepburn bill. It might be well to state to your committee that while the National Retail Grocers' Association is a vigorous and growing organization, it represents less than 6,000 retail grocers out of over 300,000 in the United States, and therefore its attitude toward these various bills must not be taken as representing the sentiment of more than 4 per cent of the retailers.

Your committee, I believe, has been informed that the National Wholesale Grocers' Association indorses H. R. bill 9352. This must be a mistake, as there is no such organization. There are wholesale grocers' associations in many States, and these are centralized in a committee, which body met in New York during the present winter. I wrote to Mr. Judson, of Grand Rapids, Mich., chairman of the executive committee, in regard to this, and beg to present his reply as

indicative of the attitude of a large body of jobbers and manufacturers of food toward a national pure-food act:

GRAND RAPIDS, MICH., February 7, 1902.

Mr. F. N. BARRETT.

DEAR SIR: Your esteemed favor of the 5th instant received. In looking over the minutes of the presidents' meeting, held on November 21, at the Manhattan Hotel, in New York, I find the following:

"The general sentiment of the convention is to the effect that a uniformity of legislation pertaining to food products is a necessity, and that a jobber or manufacturer doing business in a number of States finds it inconvenient and expensive to operate under a different pure-food law in each State. Reasonable and practicable pure-food legislation is necessary, and it should be uniform throughout the country. A rational national pure-food law is the only way to get the uniformity desired."

"The executive committee is therefore instructed to assist in every way possible in bringing about the desired legislation."

Upon motion the above instructions were given to the executive committee by the presidents' meeting by unanimous vote.

As to the objection in the bill mentioned in your letter, I am not particularly advised. I will look the matter up carefully, however, and write you again.

Respectfully yours,

Wm. JUDSON.

A number of the most powerful local and State grocers' associations and most of the grocery-trade journals are opposed to H. R. bill 9352 and in favor of a bill on the lines of H. R. bill 3109.

I am certain that every honest manufacturer and purveyor of food is in favor of laws that will absolutely prohibit the sale of deleterious foods. What they fear is the delegation of too great power to any one individual and making that person the arbiter of such an enormous interest as the food industry. To a greater or less extent all the bills presented to Congress are open to this objection, the H. R. bill 3109 being the nearest to the objects to be secured through the operation of a national pure-food law.

STATEMENT OF F. N. BARRETT.

NEW YORK, March 15, 1902.

Hon. W. P. HEPBURN,

Washington, D. C.

DEAR SIR: During the hearings accorded the advocates of a national pure-food bill you asked several witnesses as to the extent of adulteration, and their answers were very unsatisfactory. I would like to state that there are about 80,000,000 people in the United States and that a very low estimate is that it costs \$100 per year to feed every individual, which would make an expenditure for food of \$8,000,000,000. It costs between \$2 and \$3 per head per week to feed criminals and insane patients in our institutions, and it is fair to presume that the average American lives equally as well as criminals.

I have made the statement, through the Department of Agriculture, that the amount of adulterated food to the total amount of food consumed was not over 2 per cent and that the bulk of such food as is adulterated was with substances used to cheapen prices and could not be classed as unwholesome. If you examine any food report, you will find that the bulk of the complaint is made against spices, vinegars, sirups, flavoring extracts, imitation jams, and jellies. Two per cent of the total expenditure would mean \$160,000,000 worth of adulterated

food, or ten times the volume of trade in these lines. The only complete study of this subject has been with the Department of Agriculture, and in its examination of the refined sugars sold in the United States, the retail cost of which to the consumer is about \$120,000,000, they reported that they were practically free from adulteration.

The tea trade of the United States does not in the aggregate amount to more than \$18,000,000 to \$20,000,000 per year, and as the tea-exclusion act prevents the entry of adulterated tea, we have a pure tea supply.

The cost to consumers of coffee and cocoa is about \$140,000,000 annually. The great bulk of the coffee sold goes out in the green or roasted bean and is not subject to adulteration. One firm in this city puts out 6,000 bags a day in packages. Under the laws of Ohio this coffee has been called adulterated simply because it is coated with a preparation of egg and isinglass in order to preserve the aroma and aid in clarifying the coffee. To claim that this is adulteration is one of the most preposterous statements ever put forth by a food commissioner, and could only be defended on the most extreme technical ground, the same as if it was claimed that the sugar supply of the United States was adulterated because it contained one-half to 1 per cent of water and was not absolutely pure crystals.

The bulk of lard made is exported.

Probably the trade in vinegar and extracts in the aggregate does not amount to \$5,000,000. So you will see that my original statement that not 2 per cent of the total amount of food consumed was adulterated was an extreme one.

The reason that a national food act is desirable is simply that it would tend to establish standards and bring the State laws into conformity to it. I am inclined to believe that if your committee did nothing more than to enact section 7 into law and authorize the Department of Agriculture to publish in monthly bulletins their standards and the result of their work, it would almost drive out the trade in unwholesome foods. Manufacturers would at once desire to put on their goods "made according to United States standards" and the people would soon get into the habit of taking no other products than those branded "U. S. standards," and the inevitable result would be to drive out unwholesome products.

As to the vexed question of preservatives, would say that I have considered this in the paper which I have filed with your committee. This is really the most difficult problem which confronts us and one which is responsible for most of the trouble. Food commissioners and courts decide that certain articles are unwholesome when they have no facts upon which to establish their decision. I beg leave to call your attention to the fact that the Massachusetts legislature appointed a committee to examine into this matter, and they reported back that a physiological study of the subject was almost impossible, and therefore they asked to be relieved from consideration of the subject.

Section 7 of your bill provides for the study of this subject by experts; and it would be a great boon to the people of the United States if \$100,000 could be appropriated for that purpose.

Yours, heartily,

F. N. BARRETT.

STATEMENT OF HOOPER COYNE, TREASURER OF THE SEA GULL SPECIALTY COMPANY.

BALTIMORE, Md., March 19, 1902.

Hon. W. P. HEPBURN,

House of Representatives, Washington, D. C.

DEAR SIR: From the questions put to me yesterday before your committee, I gathered the impression that some members of your committee believe that we seek some trade advantage in advocating the residue clause of your pure-food bill. We do not; nor would we get an advantage by the retention of the clause. But let us assume that we do. Why should that influence the committee one way or the other? The primary object of pure-food legislation should be, and is, protection to the consumer; full, thorough, complete information. This can not possibly be accomplished—so far as baking powder is concerned—unless the constituents of the baking powder and the resulting substances left in the food are both stated. Every baking-powder manufacturer knows absolutely what residues are left in the food from the use of his powder. He can easily brand correctly, and will brand correctly, knowing full well the consequences if hauled up by the department administering the law. Said department will not be called upon to do the branding. Their province will be to determine whether the goods are falsely branded or not. No pure-food bill can fulfill its purpose and duty to the consumer, as to baking powder, that does not inform the consumer thoroughly regarding ingredients and resultants.

Our advocacy of this residue clause is based on sound principle. It conforms to the very purpose, the very essence of the bill, to wit, absolute protection to the consumer.

In behalf of my company and our associates, we respectfully ask the retention of that clause. Should there be objection to making this clause general, we suggest that it be made to cover baking powder, reading as follows, beginning at line 17, page 7: That baking powders which enter into the preparation or preservation of food, and which change their chemical nature in the preparation of food, shall be branded at the time of manufacture with the names of the principal resulting substances which are left in the food produced, when ready for consumption, together with the name and address of the manufacturer.

Respectfully,

THE SEA GULL SPECIALTY CO.,
HOOPER COYNE, *Treas.*

P. S.—The addition of the word "principal" preceding "resulting substances" we believe will overcome any objections that may have been made to the residue clause by Dr. Wylie and his Department, with whom we propose to work in harmony to help along the passage of the bill.

THE S. G. S. Co.

STATEMENT OF GALLUS THOMANN, SECRETARY OF THE UNITED STATES BREWERS' ASSOCIATION.

NEW YORK, March 10, 1902.

Hon. W. P. HEPBURN, M. C.,

*Chairman Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.*

DEAR SIR: Please accept my sincere thanks for your kind invitation to be present at the hearing on the pure-food bills and "to give my views regarding these measures." I regret to say that on the day of the hearing (March 11, 1902) important matters require my presence at Albany, and that for this reason I can not avail myself of your kind invitation.

The brewers' views upon the subject-matter of your hearing have been promulgated at three successive conventions of this association, and may briefly be summarized as follows, viz:

The brewers are strongly in favor of the establishment of Federal standards of purity for all articles of food and drink, and believe that a measure similar to the Brosius bill, or the bill recently introduced into the United States Senate by Senator Hansbrough (Senate 3342), would accomplish this purpose in such a manner as to obviate the constitutional objections that have on many occasions been urged against a Federal law relative to adulteration.

In our judgment, the enactment of the Hansbrough bill would bring about such a uniformity of State laws as would effectively prevent adulteration, and at the same time avoid the hardship, inconvenience, and loss which, in the absence of generally accepted standards of purity, sporadic and hasty State legislation must necessarily cause to the manufacturers affected by it. If Federal standards were once established and promulgated in the manner provided for in the Hansbrough bill, the interests of the manufacturers of food and drink in each State would imperatively demand, and the lawmaking power would readily recognize, the absolute necessity of State legislation in harmony with such standards, and the inevitable result would be uniformity of adulteration laws throughout the country.

This is what the United States Brewers' Association sincerely desires, and what its representatives sought to accomplish when, in participating in the various food congresses, they advocated and supported measures similar in all respects to the Hansbrough bill now awaiting your consideration.

I have the honor to be, dear sir, very respectfully, yours,

GALLUS THOMANN, Secretary.

STATEMENT OF ELLIOT O. GROSVENOR.

To the Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D. C.

GENTLEMEN: The Association of Manufacturers and Distributors of Food Products, composed of a large number of producing houses throughout the United States, respectfully submits the following requests, and asks careful consideration of the same in connection with your action upon the various food bills now before you:

1. We call your attention to present existing conditions surrounding

the labeling and distribution of food products in the several States, directly chargeable to the varied and vitally opposite constructions placed upon State food laws by the authorities and courts of each.

Your record of testimony shows conclusively, as claimed by some, admitted by others, and denied by none, that although the language of the State food laws is identical almost to the punctuation, yet under the wide difference of construction placed upon the same language by the courts and food authorities of the several States we are compelled to observe different rules of labeling for the sale of a given product in almost every State. What Michigan courts uphold as a proper label Ohio courts declare a violation of law, and this in spite of the fact that the food laws of the two States are exactly identical. (*State v. Reudly*, 57 O. S., 224; *Grosvenor v. Duffy*, 121 Mich., 220.) What the food authorities of Pennsylvania hold is a proper label for a given product the food authorities of Kentucky declare illegal, though the specific clause of the law is the same in each State.

It will not and can not be denied that this state of facts has brought the business of manufacturing and distributing food products to a condition of alarming responsibility to manufacturers, who, having shipped a product properly labeled into the State of Ohio, are suddenly called upon to accept the responsibility for the reshipment by original purchaser of this product into the State of Kentucky, where a radically different label is required. The manufacturer's name is upon the package, and the odium follows the maker of the goods, who has absolutely complied with the requirements of the laws of the State into which he sold the goods, and beyond the borders of which he can not hope to know their final destination.

We claim this condition exists and is admitted by substantially every witness whose testimony is before you; and it is this condition, with the constantly increasing complications as additional States adopt food laws, which we desire to escape, and it is not, as some witnesses have stated, a desire on our part to avoid legislation. We welcome legislation, both National and State, which will command "pure food" and protection to consumers, but we insist that such legislation shall not further embarrass honest, law-observing manufacturers. An instance based upon disclosures in the record will best illustrate this. The Michigan food law requires any jelly containing glucose to be branded, "Imitation fruit jelly." A prominent gentleman, and one thoroughly advised, in his testimony before the Senate Committee on Manufactures, stated that a jelly containing glucose should be labeled with the names of the different ingredients, and that the provisions of the Hepburn bill require such a label.

Now, as the Michigan law absolutely prohibits the printing of any word upon the package save the words "Imitation fruit jelly," how is it possible for a manufacturer doing business in New Jersey to ship these goods into Michigan? If he labels the packages to conform to the national law, his product is not salable when it arrives in Michigan. On the other hand, if he labels his product to meet the requirements of the Michigan law, he is liable under the national statute for transporting goods between States which are improperly labeled. This is not an overdrawn, but a plain statement of fact and an example of the extra hazardous conditions now controlling the distribution of food products honestly made and legally labeled among the so-called pure-food States, or States having food laws and a department for their enforcement.

The passage of a national food law upon the lines of the State food laws, and giving to those charged with its enforcement the wide power to fix standards and establish constructions of the law's language, can only result in greater confusion of labels and consequent embarrassment of honest business houses engaged in manufacturing and selling worthy food products into the composition and sale of which no deceit is practiced or desired.

The enact of the Hepburn bill (3109) in its present form must have this effect, since it leaves so much to be supplied by the officers charged with the enforcement. If this statement is questioned, our answer is, what right have we to believe that a national official's authority, under given language, is less than that of a State official under the same language as a police measure?

Since the language of the Hepburn bill (3109) is substantially that of the different State laws, what is to prevent the promulgation of a different set of constructions by the national authorities? His constructions, which must be the rule to be observed by all, since no manufacturer can afford to contest with the food authorities in the courts, for obvious business reasons, can not possibly coincide with that of all the State constructions, either of courts or food officials, for these differ as the sands of the sea. If Ohio demands a product be labeled "white" and Pennsylvania demands the same product be labeled "black," what will the construction of the national law be, and with which will it agree, and having agreed with either, what becomes of the manufacturer desiring to ship goods into the other State?

2. We respectfully submit that whatever national law be enacted, its language should plainly and truly show what its provisions require, in order that a manufacturer, advised by his attorney, may absolutely know from a careful reading of the statute what is necessary to brand a given product.

If this national law is to be made a penal one, and manufacturers of food products criminals if the same is innocently violated, we believe such manufacturers are entitled to the same protection and the same accessibility of knowledge as to what the law demands as is given in other criminal laws. If a person can read, though imperfectly, it is within his own power to read the law against burglary or against larceny or counterfeiting, or any other penal statute, and absolutely know by the law's plain terms just what he must not do to escape its penalties.

Under the provisions of an omnibus labeling law, such as the Hepburn bill (3109), no such opportunity for knowledge is given, for no two men will construe its provisions the same. The result is that every manufacturer must ask the food authorities for their construction of the law, and conform to that construction. He may, of course, contest such construction in the courts, which no reputable, sane manufacturer will do for obvious business reasons, for no manufacturer can afford to be painted in the daily press as opposing the food laws, or, as it is generally expressed, be found in court charged with adulterating food.

This is the condition under the various State food laws, and in what way can it be obviated under 3109 if it becomes a law? There will be but one course open to the manufacturer under such a law as 3109, and that is to obey absolutely the food authorities' construction, whether right or wrong, legal or scientific. It will be necessary for the food

authorities to publish their constructions of the laws in order that manufacturers may know what is required, and these constructions must become the rule of conduct. A violation of these arbitrary rules must subject the violator to prosecution, or the law is a dead letter. No self-respecting food authority would publish a set of constructions (rulings) and fail to enforce them. A manufacturer thus becomes subject to the caprice, bad judgment, and incompetency—to use no stronger terms—of those charged with the law's enforcement.

Why, then, is not 3109, if enacted, simply a law to give power to the food authorities to make further and more particular laws? If Congress is to give this power to these authorities under which they will promulgate their constructions of the law, why should Congress not place in the law itself and make part of that law these very constructions, power to make which the law absolutely gives to the food authorities, and without which the law can not be enforced, and without the guidance of which no manufacturer could attempt to distribute food products.

Your record discloses without contradiction that in the States having food laws a set of constructions upon those laws is issued by the State commissioners and is recognized as the rule of conduct or measure under which all manufacturers must conduct their business. The 3109 grants this same power to national authority. We submit it is too great a power to place in the hands of any man or set of men, because of the indefinite language of the bill and its power given authorities to change such construction at will.

Believing, then, that—

(a) Manufacturers are reasonably entitled to relief from, rather than suffer additions to, the present multiplicity of constructions of food laws; and that

(b) They are certainly entitled to have a national food law state its exact requirements in terms as plain as language can make them, we respectfully request:

3. That your committee favorably report upon the Corliss bill, H. R. 12348, or, if that is in your judgment unwise, that your committee favorably report out a substitute bill, which shall give to the food manufacturers of this country the protection above referred to, and which are absolutely necessary to the continuance of business of this character.

Very respectfully submitted.

ELLIOT O. GROSVENOR,
For the Association.

STATEMENT OF W. CLARKE MARSHALL.

CHICAGO, March 18, 1902.

To the COMMITTEE ON INTERSTATE COMMERCE,
United States House of Representatives.

GENTLEMEN: I respectfully beg to be permitted to lay before you the views of one advocate of pure food who is positive that he fairly represents the sentiments of the suffering millions of consumers. That men should be allowed, under any circumstances, to plead for the right to issue impure food seems incredible, but that votes have been changed in consequence of such arguments, as stated by the Tribune here on Sunday last, is simply, if true, evidence that we have

indeed fallen upon evil times. It appears that what is known as the "Hepburn bill" is the objective point of all who advocate the right to deceive, cheat, and even murder, putatively, the unsuspecting or ignorant consumer.

Allow me to examine a few of the arguments in favor of impure food, as reported here by the press.

1. "If," says one of the advocates of impurities, "we can prepare a food product that pleases the public taste and that is not injurious to health we claim the Government has no right to interfere with the manufacture or sale of such products."

2. Another advocate of the scoundrelly manufacturers pleads for a law the provisions of which can be easily and profitably evaded or the penalties comfortably paid.

3. And still another begs a delay in enforcing the proposed law, "as he has many thousands of dollars worth of goods (?) which he could not work off in the time named for the law to become operative."

"If we can prepare a food product," etc., says No. 1. This gentleman is supposed to represent firms which prepare millions of pounds of food products, every pound of which is fraudulent, vile, unhealthful, and dangerous to human life. Yet they will bring doctors and chemists and army and navy officers to prove that the goods are "healthful," while a thousand dead soldiers, having been forced to consume the filth, mutely testify to the contrary in vain. (Vide report of the Wade commission of inquiry, 1889. Also, see New York Herald of January 29, 1899.)

I pronounce the ground occupied by No. 1 as wholly untenable from any point of view worth considering by respectable people, and I further may be allowed to remark that it is to such arguments, backed by facile officials and laws, which although declared unconstitutional are still enforced, that we can trace exactly the loss of our foreign trade, and the fact that the term "American" touching our food products abroad depreciates their value (some years 50 per cent) as compared with Irish or Danish products of the dairy or ranch, to the loss of the producers of the farms of hundreds of millions of dollars annually. (Vide Yearbook, 1895-96, and reports of Hon. J. Sterling Morton, 1895-96; also decision of C. J. Scott, at Fort Smith, Ark., 1895 or 1896.)

There is one view of the case which should receive the attention of the committee, likely to be forgotten in the noise made by the manufacturers.

It is admitted, I believe, by all social economists, that all wealth springs from labor. It is the laboring man whom these human harpies exploit. As a rule he is not free to act for himself—he hasn't time; nor is he always competent to judge for himself. He is in small or no sense a physiologist; but he is lawabiding; and if under color of law you present him with impure food he will eat it and feed it to his children. He will thus weaken his wealth-producing powers and that of the children, and it can be seen that as far as a vicious law can reach it assails the very foundation of your prosperity, the very source of your power. You would not feed your horse on oats from which the nutritives had been extracted, yet you will, or rather we do, feed our soldiers on meat which on analysis will not show 2 per cent of nutritives in a possible 100 per cent; and then we go moaning about, wondering, or pretending to wonder, about the large per cent of fatal disorders among our troops.

You can very justly ascribe the greater part of it to a vicious national inspection law, which, while it inspects, does not destroy carcasses infected with deadly diseases. If you ask me what becomes of them, I will tell you that they are consumed by the American people, and it is fair presumption to say that the Army and Navy get their share of it. And while on this part of the subject I will state, to show you the necessity of prohibitive penalties, applicable alike to criminal manufacturers and to facile officials, that the official labels of the Interstate Commerce Commission, and those of the Bureau of Animal Industry, in the Agricultural Department, are so nearly alike as to deceive any but the most attentive, and that these brands are rarely or never affixed to packages by officials, and consequently are void, except as they are intended to be fraudulent. I refer your honorable body in this to the Hon. James Wilson, Secretary of Agriculture, and to the records of that Department.

Penalties, then, gentlemen—you can make no mistake in protecting any law you may pass with penalties, severe and rigid. No. 3 is too naive a gentleman to subject to the terrors of logic. He pleads guilty and asks the mercy of the court. Well, if you think you can afford to divide with him, or any other, the responsibility—to belittle your law, to weigh his money against human lives endangered by his infamous products—why, you may yield to his pleadings; but I would urge upon you to make the law operative instanter. I would, as a judge, whose duty is to the people, give a thief no time to hide his plunder, much less, time to pursue his infamous vocation.

A Dr. William Freer is reported as stating to you that he did not claim that all adulterations were detrimental to health. Well, I for one, and I know there are others, entirely disagree with the doctor. Adulterants when used to debase medicines are murderously dangerous though per se harmless. When used to corrupt articles of food upon which the consumer relies for the force required to repair natural waste or supply strength for his duties they are equally murderously dangerous, though of themselves we will say harmless. But there is no such thing as a harmless adulterant. The Illinois pure-food law defines "adulteration" to mean, in one of its sections, "the abstraction from the original substance of any valuable necessary constituent;" a quite unnecessarily severe restriction, which renders the law partially inoperative from the fact that meat can not be preserved with salt without abstracting a percentage of its most valuable constituent, namely, its albumen; but the law should fix the limit of the necessary abstraction of values, so that in no case should the article be dangerous to the health of the consumer; and certainly he should be informed by brand or label of the amount of food he was paying for, all of which is feasible, easy, and just. Under the Illinois law meats are sold from which 98 per cent of the original values have been abstracted. The consumer of this stuff, if confined to its use, starves to death or develops deadly diseases attendant on inanition.

We have in our business the extract of beef; this is prescribed only by ignorant doctors to failing patients. Also the juice of beef, which is simply a fraud and a very dangerous one, being, in some cases, a compound without a vestige of beef product, and in others an albuminous compound preserved by chemicals; yet these are prescribed by ignorant physicians for feeble patients. There should be no hesitation about affixing proper labels on all food preparations, and there

could be no valid objections to such labels if the products are pure. I have confined my remarks to the meat products as these, at present, are the most dangerous and the most vicious, at the same time the easiest to render pure.

I am, very respectfully, yours,

W. CLARKE MARSHALL,
7738 Lomis Avenue, Chicago.

Thereupon, at 12.10 the committee took a recess until Monday, March 24, at 10.30 a. m.

MONDAY, *March 24, 1902.*

The committee met at 10.30 o'clock a. m., Hon. William P. Hepburn in the chair.

STATEMENT OF DR. PERCY D. HICKLING.

Dr. HICKLING. Mr. Chairman, I am here on the part of the committee of the Business Men's Association of Washington, D. C. I think a few of the members were heard last Friday morning. I am here merely to urge upon this committee the importance of the bill known as the Hepburn bill, which is under consideration, I believe, by this committee.

From my position as a physician, having for a number of years to attend among the poorer classes of the city—I am having charge now of the hospital that receives the poorer and lower classes of patients belonging to the city—I desire to call your attention to the results of poor food, as far as my judgment and experience go, upon the poorer classes of people, those who are compelled to eat the cheaper foods obtained at the smaller groceries.

Among that class of people, as well as I am able to observe, diseases of the stomach are not only very common, but are yearly on the increase. I regret that I have no figures to present on that subject, but you will understand that I am a practitioner and do not keep a tab or a record of all my cases. But I have been impressed with the fact that among the class of patients where the stomach should probably be one of the strongest organs such is not the case. We can well understand that among the wealthy, eating at all hours and eating highly seasoned and highly prepared foods, to say nothing of the drink that goes with the food, that stomach trouble might be common; but among the poorer classes, where common food is the rule, food which should be pure and which should be proper, that food in my judgment has been responsible almost entirely for the sickness and disease of this special organ of digestion.

Another point I want to call to the attention of the committee who are to take this matter up in a business way, is that we do not know and we can not tell the effect of drugs which now appear to be harmless, when used constantly as a matter of diet. You take, for instance, phosphorus, a drug which is used in some form, daily, by physicians in prescribing. In the form of phosphates, if not in the form of pure phosphorus, it is prescribed. It is used with benefit as far as we can see and know its results. But if that drug were used for a long time, for years, not only every day but three or four times a day, we can not

tell what the result will be. The result might be entirely different; it very probably would be.

If we can judge from the experience of workers who come in contact with this substance we must come to the conclusion that such a use of it would be harmful. Take the workers who are subjected to its fumes. We find disease of bones, which to an outsider would apparently be very remote from the effect of phosphates; but it has been demonstrated beyond a doubt that the disease of the bone is due to inhaling the fumes for a long period of time.

The well-known lead is another example of that. Lead we give in medicine with benefit for short periods of time, for specified purposes. And yet with those who take it constantly we know the terrifically bad results that are sure to follow.

And so with silver and other drugs that I might mention.

And it has occurred to me, although I have no direct proof of the matter, that possibly the use of salicylic acid, which we know enters so much into the composition of prepared foods and which is by some considered harmless, may be considered responsible for a great many of the conditions of the stomach.

So, we do not know, we are not in a position to speak of what things can be added to food for the use of people, constantly, and say that they are harmless. We can not do it. There may be a chemical, or a drug, or a substance which now we would state was harmless, and if its use went on unrestricted and with increasing quantities, increasing amounts, we might in a few years have a great calamity that we would have to correct; we can not tell.

Another thing. To prove a matter of that kind is very difficult, requiring study and expense, which at the present time in this country there are no means that I know of of ascertaining whether these things are doing harm or not.

So, I can only make a plea for the bill as it now stands, and state that we believe as citizens and as physicians that we have a right to obtain what we ask for in the way of food, as well as in the way of merchandise, and that any substitution, whether harmful or harmless, should be prevented as far as possible.

The CHAIRMAN. Have you concluded your statement, Doctor?

Dr. HICKLING. I think that is all I have in mind, unless the committee desire to question me.

The CHAIRMAN. The committee are grateful to you for your kindness.

STATEMENT OF MR. ALEXANDER J. WEDDERBURN, CORRESPONDING SECRETARY OF THE NATIONAL PURE FOOD AND DRUG CONGRESS.

The CHAIRMAN. How long a time do you desire, Mr. Wedderburn?

Mr. WEDDERBURN. I presume, sir, twenty-five or thirty minutes.

The CHAIRMAN. You are recognized.

Mr. WEDDERBURN. I represent the National Pure Food and Drug Congress, on its executive and legislative committees and as its corresponding secretary.

I am here to agitate on their behalf the passage of the Hepburn pure-food bill, and not being a lawyer or a scientist or a public speaker, I had taken the precaution to prepare what I had to say in

writing; but as Dr. Wiley in his very able and excellent address has covered the subject so fully, so thoroughly, and so ably, I will confine myself to a very short and probably somewhat rambling talk on this subject.

In the first place, the question has been asked: Who are here in favor of this bill; who are here opposing it? Now, the gentlemen who oppose this bill, those who favor the Corliss bill, are the gentlemen who represent, according to their own statement, one new organization known as the Manufacturers and Distributors' Association. What they are I do not know. Some of their members belong to what is known as the Preservers' Association of the United States. That association has never indorsed the Hepburn bill.

Mr. MANN. But the Corliss bill was introduced at the request of the National Association of Retail Grocers.

Mr. WEDDERBURN. Retail grocers?

Mr. MANN. That was the name of the association.

Mr. WEDDERBURN. There were three distinct associations that were named, I think. There was this distributors' association, represented by Mr. Grosvenor, who also claims to represent the Wholesale Grocers' Association, and Mr. Scherer, representing the Retail Grocers' Association.

Mr. MANN. No; Mr. Grosvenor is an officer of the National Association of Retail Grocers. What else he may represent I do not know; I only know that from letter heads in correspondence I have had with him.

Mr. WEDDERBURN. I am only speaking of his statement here before the two committees of Congress. He appeared as their representative. But right on that point, I have a letter here from the editor of the leading grocery paper in the United States—the New York American Grocer—which gives some figures which may be of interest. I would prefer to read what Mr. Barrett says:

As regards the statement that 70,000 retail grocers favor the Mann bill, I would state that the exact number of grocers represented in the National Retail Grocers' Association is indicated by the amount of per capita tax paid into the treasury, and as this was less than \$600 it follows that there are less than 6,000 retail grocers who are members of the National Retail Association, out of 300,000 in the United States. There are 10,000 retail grocers in Greater New York, and I do not believe that ten of them have ever heard of a pure-food bill. The Philadelphia Retail Grocers' Association and the Pennsylvania State Association, the New Jersey Association, and the Retail Grocers' Association of Brooklyn are all opposed to the Mann bill and favor the Brosius bill.

Now, the retail grocer who would come here before this committee and ask for the passage of a bill that did not protect him, or one like the bill prepared and known as the substitute bill, because Mr. Corliss or Mr. Mann both introduced their bills by request, and their names should not be connected with them. The substitute bill is one that gives them no protection, that leaves them absolutely liable for the crime that another man committed in another State.

Our bill gives absolute protection to the retailer, no matter whether he is a grocer or a druggist. The law is allowed to follow across the State line the man who commits the crime. Some of our Southern friends object to interfering with the rights of the States. This bill is an act to permit the States to carry out their own laws. I have been in correspondence for a number of years with nearly every dairy and food commissioner in the United States, and while most of those gentlemen

do not like the administrative feature of the Hepburn bill, preferring an independent bureau, all of them except two (one of them was Mr. Grosvenor, and the other—well, one was Mr. Grosvenor; he has been thoroughly consistent in the matter) have been in favor of passing this law so as to enable them to execute their own law.

There were before this committee a number of gentlemen representing individual firms. While those gentlemen and the association that came here had a perfect right to be heard, and should be given a fair hearing, a fair consideration, as any other individual, when they do not represent a fraction of 1 per cent of the entire population of this country it does seem to me strange that they should come here and try to press their individual preferences, their individual claims, upon this committee.

I hold in my hand a document which gives the names of the organizations that compose the National Pure Food and Drug Congress. Of course I have no idea of reading it, but I will file it. It shows that 35 States of the Union are represented in the body; that 28 great national organizations were represented in the first meeting and 35 in the subsequent meeting of the National Pure Food Congress; that 80 national and local and State organizations were represented, and as many as 125 in the second National Pure Food Congress. They represent every scientific and medical and business interest in this country. They come from 35 States of this Union, and they decided upon this bill that you are asked now to pass. They represent the wholesale and retail druggists of this country, the great proprietary interests of this country; they represent the brewers of this country, the liquor dealers of the country, and it is useless for me to keep on mentioning them; the medical society, the chemical society. There is a list of them here, sir.

These are the people that come here and ask in their own behalf, and in behalf of the people of the country; in behalf of the National Grange, the Bee Keepers' Association, the National Dairy Union, all of them are represented in this organization, and each and every one of them have asked in their separate organizations that this bill become a law.

In addition to that, sir, the great boards of trade, the National Board of Trade of these United States, the Cotton Exchange of New York, the Commercial Exchange of New York, and hundreds of boards of health and exchanges throughout this country have asked the passage of this bill.

On page 198 of the final report of the Industrial Commission we find these words, this suggestion: That a pure-food section in the Chemistry Division of the Department of Agriculture be established, to prevent the adulteration, false branding, and deceptive imitation of food, beverages, and candy in the District of Columbia and Territories, and to regulate interstate traffic therein. They practically ask the adoption of this bill.

Three of the four Secretaries of Agriculture, including the present Secretary, have asked that this bill pass. Five or six State legislatures, including New York and Kansas and Missouri and Colorado, have passed resolutions instructing their Senators and requesting their Congressmen to pass this legislation. Ninety-nine per cent, I will say, of the people of the United States ask this remedial law.

Now, the gentlemen from the South, some of them, have seemed to

think that we are interfering with the rights of the States to manage their own laws. I repeat it, sir, that the States can not enforce their own laws where they have them unless we have this enabling act at our hands.

I was speaking to people who oppose this bill. I think probably there is a point that has not been brought out before, and it was shown to me only a week ago. I do not care to mention any names, because it is not fair; but you see this large book here I hold in my hand, a small catalogue of the same firm which says we will sell to the retailer, although anywhere in the United States or in the world, one article at the same price we will sell a thousand articles. They then go on and enumerate everything in the catalogue of products, not only foods, drugs, and pianos, and threshing machines, and everything in the hardware line. You can see what that book is; it is a thousand pages or more, and it is very interesting if you had time to read it.

They not only propose to sell that to the individual purchaser at home, but they then go to work and try to get the retailer, and the manufacturer, and the tradesman, and the liveryman, and all those people, but the milk in the cocoanut is this: They say we will hand you these goods from our house in an unbranded box without a tag or without a label upon it. If this bill passes they cannot send these goods out to destroy the retailer, to ruin the retail trade in the United States, without putting their brands and marks on them. No wonder firms engaged in the business come here and protest against this bill. I do not think this house was represented here.

Mr. MANN. Do you mean by that under the Hepburn bill a manufacturer of goods could not manufacture goods for a jobber and put the name of the jobber on at his request?

Mr. WEDDERBURN. That is the first time that question has been raised.

Mr. MANN. That is the question you raised.

Mr. WEDDERBURN. No, sir; the point I raised is this: That the name of the manufacturer must be put on the package.

Mr. MANN. Whether it is a jar of jelly or a box containing a hundred cases of jelly; that is the question I am asking. Whether a manufacturer would be permitted to manufacture goods for a jobber and put on the name of the jobber as the manufacturer.

Mr. WEDDERBURN. I presume that would be fixed by a ruling of the Secretary, unless you definitely stated in this bill. I do not think it is definitely stated there.

Mr. MANN. I understood you to say it could not be done.

Mr. WEDDERBURN. No; I say these gentlemen are sending out their products all over the United States, competing with the retailer in every branch of trade, destroying the local trader in all towns and villages, and in all States to a great extent; destroying one of the most important, or practically all of the small industries of the country, wiping them out by sending goods out without brand or tag on them, without anything to show where they come from or what they contain.

These gentlemen, I believe, are honest in their proposition. They do that to protect the man at home against the retailer. That is what they say they do it for. And they say, further, you take this book, and if you do not buy goods from me you can take it to the retailer and force him down in his price.

Mr. MANN. Do you mean by this bill that you expect to wipe out the mail-order house?

Mr. WEDDERBURN. No, sir; I do not mean anything of the kind. But I mean that they shall brand their goods where they come from. I do not mean at all to wipe out the mail-order business; I do not think it could be done, and I do not think it would be advisable.

Mr. MANN. Is it not a common practice for the retailer to sell goods which they have purchased without having the labels on, and is it not true that the retailers themselves put their own labels on?

Mr. WEDDERBURN. That is true, and I do not think it ought to be permitted unless the retailer is willing to accept the responsibility for what he sells; then the responsibility could not go beyond his store.

Mr. MANN. Is not that the reason for sending out unbranded packages?

Mr. WEDDERBURN. No, sir; the reason for sending out unbranded packages is—suppose you are living in Smithville and I have a store there; you want to buy these goods, but you do not want me to know it.

Mr. MANN. How would the storekeeper know what I bought?

Mr. WEDDERBURN. I do not know, sir; that is exactly what they say in these books.

Mr. MANN. The purpose of that is to permit a retailer to put his own label on?

Mr. WEDDERBURN. No; that is not the retailer, that is individuals.

Mr. MANN. They sell to the retailer, too?

Mr. WEDDERBURN. Yes; to the blacksmith and to the manufacturer. It is all there in that book.

Mr. MANN. I do not suppose there is a manufacturer on a large scale in the United States who does not manufacture unbranded goods at the request of jobbers and put the name of the jobber on as a manufacturer. I do not think there is anything out of the way about that?

Mr. WEDDERBURN. I know that has been done. I was a manufacturer at one time and manufactured goods for others, but I was responsible.

Mr. MANN. There is nothing improper about that.

Mr. WEDDERBURN. No.

Mr. MANN. That is what these people refer to?

Mr. WEDDERBURN. This proposition here to send out food—I do not care anything about the other stuff, but to send out food and drugs and prescriptions to every hamlet in the United States without any label on it at all—and the individual or the merchant, it does not make any difference, it releases them from all responsibility as to the character of the goods, and it absolutely destroys the retailer. They do not even use an envelope with a business stamp on it. They send it out blank.

I do not want to detain you any longer, Mr. Chairman and gentlemen. It seems to me that this matter has been gone over so thoroughly that this committee is fully aware of all the facts. The bill has been reported in the House seven times, and I think in the Senate there have been nine committee reports.

Mr. MANN. When was this bill first prepared and introduced, Mr. Wedderburn?

Mr. WEDDERBURN. It was first prepared in the Fiftieth Congress, and introduced by Gen. William H. Lee; that is, so far as it related to putting the control under the Department of Agriculture of all food and drug investigation.

Mr. MANN. If you could do so, I think it might be very interesting to have a little history.

Mr. WEDDERBURN. I have it right here in my hand. I can read it—

Mr. MANN. I suppose the Hepburn bill is a growth, is it not?

Mr. WEDDERBURN. It is an absolute growth; yes, sir. The first bill—the bill introduced by General Lee—was no more like the present Hepburn bill than chalk is like cheese, except it aimed at the same purpose; it aimed at the proper branding of foods and drugs, and when I say proper branding, there is no attempt on the part of any one connected with the Pure Food and Drug Congress, or any one that has anything to do in connection with the bill from its inception to the present time, to prevent the compounding of any product. These products in a great many instances, the compounded product is better than the original product or the one that is substituted, and should be permitted and given the widest latitude. There has been a question about putting the formula on. The question has been asked a dozen times: How about the formulas of what the article contained?

The bill says "the formula shall not be given away." It would mean the ruin of a great many manufacturers if they were required to brand their formulas upon the bottle, which they have worked for years to build up. It would be ruin, it would be unjust, and this bill provides against any such thing. That was brought in. That suggestion was brought in probably by the proprietary men themselves before Colonel Hatch's committee in the Fifty-third Congress. One little change after another has been made, and then when this great body of representative men gathered here they took this bill section by section, word by word, in the committee, and stayed there for hours, into midnight, and part of the next day, I think. The committee had it for over eight or ten hours discussing it section by section, and we had the warmest kind of a fight, and yet they got together, all the diversified interests, the great wholesalers on one side and the retailers on the other, the scientist here and the consumer there.

All urged one single thing, and that was to secure this legislation. While I was a representative of the Department of Agriculture I was in correspondence with over 3,000 gentlemen, from one end of the country to the other, engaged in these various branches of industry and science, and the business men urged and begged of the Department to do something to relieve them from the pirates in their own trade. They were the men that wanted it; every honest business man in the United States wants this bill. They do not want to be forced—

Mr. MANN. Do not make a statement as broad as that.

Mr. WEDDERBURN. Yes; well, with very few exceptions. I will say this: I do not mean the other fellows are dishonest absolutely, but I will tell you they do not know what they are fighting. They think it is going to hurt them. They are doing it through ignorance.

Mr. MANN. I am very frank to say that as far as I am concerned I have never felt very friendly toward what is now known as the Hepburn bill. But, on the other hand, the action of the Pure Food Congress and the history of the bill has impressed me very strongly that it might be the proper thing. My recollection is that the Pure Food Congress did not represent the retail dealers to any extent. They represented, mostly, theories.

Mr. WEDDERBURN. There you are absolutely mistaken, sir. Take a look at that list.

Mr. MANN. Never mind now. Of course I have examined that list

when they were here; and the Brosius bill, which was introduced in the Fifty-fifth Congress, and again in the Fifty-sixth Congress, was one bill; then another bill was introduced. I think the Hepburn bill is not the same as either one of them. But of course the growth of any particular piece of legislation is usually slow, if it is accurate, and very often it is made accurate by being a slow growth.

Mr. WEDDERBURN. I believe that this bill is as perfect as it can be until it is put in operation. We have not gotten any suggestions as to amendments since the last time the Pure Food Congress went over the subject. You asked Mr. Frear, the other day when he was on the stand, about it. He introduced the sections in regard to the residuum clause, and that addition to the seventh section was done at the suggestion of Mr. Morrison and his colleagues of the Alum baking powder. It was done by the full committee, what is known as the advisory committee, composed of the members of the executive committee and such resident officers and the original seven men who called this convention together. They accepted not unanimously the residuum clause, but hoping to prevent a trade fight and the opposition of the trade people, we accepted that and took it to Mr. Brosius and explained it to him and he put it into the bill. That is the way that got in there. I think a certain Senator conferred with them and satisfied Mr. Morrison and Mr. Cohen, as well as everybody else present, that it was absolutely unnecessary to put the clause in the seventh section, the lines of the seventh section, that they were absolutely useless, and the Senate committee has stricken them out.

Those gentlemen have said if the residuum clause is eliminated they will still support this bill, showing their good faith and their willingness to get this legislation through.

Mr. MANN. I suppose you are as familiar with this bill as anyone?

Mr. WEDDERBURN. Probably so; I am not a lawyer, you know.

Mr. MANN. If you were a lawyer, I would not expect to get anything from you.

Mr. RICHARDSON. You have not much faith in them?

Mr. ADAMSON. If he was a lawyer, he would know how to conceal his meaning and withhold his information.

Mr. MANN. In the case of these compounds and special foods you do not think they will have to show what they are made from you say; you do not think they will have to give up their trade secrets?

Mr. WEDDERBURN. They will show that they consist of certain articles, but not show the trade secrets.

Mr. MANN. That is what this section is. "In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names," and so forth, "Provided that the same shall be labeled, branded, or tagged, so as to show the character and constituents thereof"—

The CHAIRMAN. Where do you read from?

Mr. MANN. Page 7, under "First," and it may be covered by something else, Mr. Chairman.

Mr. WEDDERBURN. We would say that this is a compound product, composed of apples and glucose, colored with either vegetable or aniline dye. I do not know whether the gentlemen told you the other day, but he told the Senate committee, that he made his jelly 50 per cent apples, 40 per cent glucose, colored with a vegetable dye, flavored with raspberry essence, and a little hay seed to give it the appearance

of raspberry seed, and then he demanded in behalf of the poor people that he could sell them that so they could have red raspberry jelly.

Mr. MANN. So he could have the imagination help digestion, as Dr. Wiley has said is so essential. But this is rambling from this question. Your idea is that it would have to show the different kinds of constituents, but would not have to show what the actual constituents were, in the parts?

Mr. WEDDERBURN. No; and the law says distinctly that no proprietary—

Mr. MANN. That may be, but you have to show the character and constituents. So, if you show the constituents on the compound, you show how much of each thing goes to make it up.

Mr. WEDDERBURN. No; that would give the man's formula. Dr. Wiley had a label on Saturday in which it said "this was made out of apples," but did not show the proportions.

Mr. MANN. I beg your pardon; it said how much apple, and how much sugar, and how much glucose.

Mr. WEDDERBURN. He did not read it.

Mr. MANN. He did not, but I did. I read it into the record. That was the case.

Mr. WEDDERBURN. I believe the bill itself—that was not the main point developed. That is a rule of the District board of health.

Mr. MANN. Would not that be the necessary rule under this provision of the statute? Would not that be a necessary rule?

Mr. WEDDERBURN. I do not think so. I think our aim—

Mr. MANN. Whatever the actual wording of the act may be, you do not wish, as I understand, to interfere with those proprietary foods provided they are found to be wholesome, and provided they state the character of all the constituent products?

Mr. WEDDERBURN. Exactly, sir.

Mr. ADAMSON. What right has a man who has no patent to hold in exclusion the usual formula the other people have a right to know?

Mr. WEDDERBURN. Mr. Adamson, in regard to that, if I had a proprietary medicine, or a proprietary food product—

Mr. ADAMSON. If there is anything original in it, you can get the benefit of it at the Patent Office.

Mr. WEDDERBURN. One moment. I would not try to patent it, because that would be exposing my formula, and if I had a good formula I would want to keep it secret.

Mr. ADAMSON. But it would prevent anybody else getting up the same combination. Intelligence is not confined to one firm.

Mr. WEDDERBURN. Of course, thousands of persons make jellies and thousands of people make preserves.

Mr. ADAMSON. I should think it would be very easy for numbers of manufacturers to strike on the same formula. I do not think there is much in that.

Mr. WEDDERBURN. There is one important reason—I do not know that it has been brought out—why this bill should pass, to have this stuff properly branded. A man in Philadelphia, who certainly had no idea of doing anybody any harm, did the thing that first started the row back in the eighties. He bought a yellow color to give his cream puffs a yellow color. He put chrome yellow in them, and he put too much in, and he killed himself and wife and five children, and poisoned everybody in the neighborhood. He had not any idea of committing a crime.

Mr. MANN. The pure-food law would not have saved his life, because they would not have found it out until after he was dead.

Mr. WEDDERBURN. They would have had that chrome yellow branded, and to a certain extent I think it might have saved his life.

Mr. MANN. You can show the constituent parts and still not show the amount of the constituent part, the amount of each part. Take the case of jelly. You want them to say "glucose and apples." Everybody knows quince preserves contains apples and quinces. Nobody would eat them if they were made out of quinces alone; they would be too strong. But suppose you make them nine-tenths out of apples and put some artificial flavoring in. That would be a fraud according to your theory.

Mr. WEDDERBURN. Not if they were branded "compound."

Mr. MANN. You can not tell whether they are the proper compounds or not.

Mr. WEDDERBURN. I would not do as the State commissioners do. I would not brand these articles "adulterated," because I think that is too harsh a word to put on them. I do not think you or I would want to buy anything that was marked "adulterated" in great big letters.

Mr. MANN. How is it a protection to the consumer to brand it "compound" unless you show what the constituent parts of the compound are?

Mr. WEDDERBURN. It shows a corn sirup, or an apple jelly with flavoring extract and hayseed and analine color. If I do not want the analine color, why I won't buy it. If I don't want the hayseed, I won't buy it. I see there what I am buying.

Mr. MANN. I suppose there is an easy way of getting around the hayseed proposition. Of course, hayseed is just as healthy as raspberry seed, so far as that is concerned.

Mr. WEDDERBURN. It is not a question of health; no.

Mr. MANN. They probably can collect raspberry seed as easily as timothy seed.

Mr. WEDDERBURN. Your brand would show you that there was not any raspberry.

Mr. MANN. But suppose they put a few raspberries in, that would meet your objection.

Mr. WEDDERBURN. They had a jar here of strawberries—

Mr. MANN. There is no difficulty in the world of finding fraud—

Mr. WEDDERBURN. Let us try to stop it.

Mr. MANN. I read this morning in a paper from Chicago an article taken from the Philadelphia Record, describing at great length how they make artificial honeycomb and fill it with glucose, and spread it before the people, to show how the people are being deceived when they purchase honey, and Dr. Wiley said such a thing does not exist. I do not know whether that is true or not, and no one seems to know.

Mr. WEDDERBURN. There is a honeycomb that is manufactured, but I have not learned that it is sold.

Mr. MANN. And that is the way—by these statements that go out—that people get their impression as to the adulteration of foods. If I had not just heard Dr. Wiley I would have supposed that that article was true and that nearly all the honey we eat is artificial.

Mr. WEDDERBURN. It has been estimated that we have 75,000,000 people in this country, and they only consume \$2 worth per week of food and drink—

Mr. ADAMSON. You are apt to mar the efficiency of legislation by stooping and bending every time you run up against a man's supposed interest. But if you are going to take hold of this at all you ought to control the whole subject by legislation.

Mr. WEDDERBURN. In regard to these laws there, I have nothing to do with them. It is only my individual opinion. I am not an officer of the Government and have not been for six years. I have had no connection with it whatever, and therefore my own idea is one thing and what the Department of Agriculture will do is another.

Mr. ADAMSON. And it does look to me like the very best possible thing for Congress to do, if not the only thing it ought to do, would be to require people to inform the trade by labels exactly what is in a package.

Mr. WEDDERBURN. It ought to be branded "blended" or "compound."

Mr. ADAMSON. That would not mean anything.

Mr. WEDDERBURN. Well, probably you are right, sir. I have paid very little attention to that part of it. I was going to tell Mr. Mann that there are \$156,000,000 a year spent by the American people for what I call adulterations—that is, injurious adulterations. Even estimating that as low as 2 per cent—

Mr. MANN. That is a guess, of course.

Mr. WEDDERBURN. The figures came from the American Grocer, and they have never been denied. The estimate of 15 per cent of adulterations on the fraudulent branded goods is certainly not too heavy, because most State officers estimate them at 25 or 30 per cent. Of course all these things must be more or less guesses.

I am very much obliged to you, Mr. Chairman and gentlemen, and I trust you will pass this bill.

Mr. RICHARDSON. Have you given any particular attention to the question—we have had it up here for some time—of baking powder?

Mr. WEDDERBURN. No, sir; I have never paid any special attention to it. I had an idea at one time, and I think it was stated in the report I made to the Department, that alum is injurious to health. I believe now that the lump alum, as I understand it, and quite a number of the scientists say so, is injurious. I wanted to ask Dr. Wiley about it, but I omitted to.

The CHAIRMAN. I can say that on a former occasion Dr. Wiley testified that the residuum from alum that is left in the food is not harmful.

Mr. WEDDERBURN. He made the statement—

Mr. TOMPKINS. It ceases to be alum; he stated that there is an innocent chemical result.

Mr. RICHARDSON. Is it not a fact that the residuum in every case of alum or cream of tartar depends upon the manner in which the heat is gradually applied to it, which brings about evaporation?

Mr. WEDDERBURN. I should suppose so, sir; but I am not a chemist and know nothing about that.

I will say this, that I do not think that the residuum—we have used them now for a good many years, both alum and cream of tartar—I do not believe either one of them is unhealthy.

Mr. RICHARDSON. If that gradual heat is imperfectly applied and applied up to a certain rate of heat, then the residuum would be left in a degree in worse form than if the heat had been fully applied, as I

understand it, and you might get Rochelle salts out of one and another kind of salts out of the alum which would be just as harmful as the Rochelle salts, if the heat is imperfectly applied, as I understand it.

Mr. WEDDERBURN. I would like to ask Professor Bigelow, who is a chemist, to answer that question.

Mr. RICHARDSON. Never mind; we have examined a gentleman on that point.

The CHAIRMAN. He was only examined on one branch.

Mr. MANN. It was stated in our previous hearing that it was impossible to bake bread without having sufficient heat applied to turn either the alum baking powder or the cream of tartar baking powder into a gas.

The CHAIRMAN. A chemical change.

Mr. RICHARDSON. I was not present at that examination.

Mr. WEDDERBURN. You can see the best kind of an answer to your question in Dr. Wiley's testimony before the Senate committee the other day.

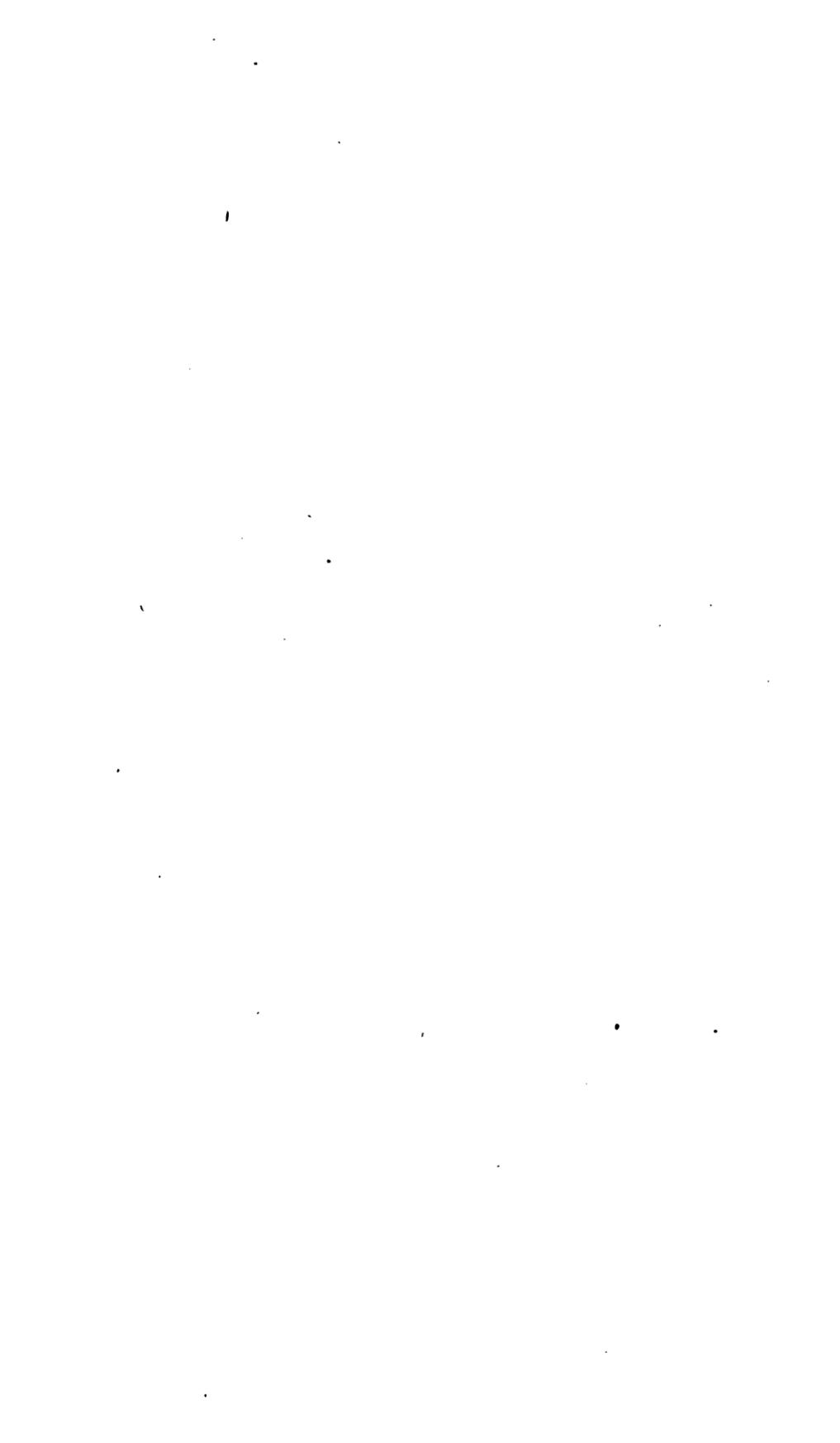
Mr. RICHARDSON. That is what the chairman informed me; I was not present.

The CHAIRMAN. Is there any other gentleman present who wishes to be heard? If not, the committee's hearings on this subject will be closed, and the committee will go into executive session.

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